

# FLIGHT

The  
AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

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## Flight

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### CONTENTS

|  | PAGE |
|--|------|
| Editorial Comment  |      |
| South Africa and Aviation                                    | 897  |
| Germany and the Air  | 898  |
| Making Airways Pay   | 898  |
| An International System                                      | 900  |
| With the Camera and the Plane: Eastbourne                    | 899  |
| Aeroplanes for India   | 900  |
| The Austrian W.K.F. Sporting Biplane                         | 901  |
| Aero-Engines at the Crystal Palace. (Concluded)              | 904  |
| Air Ministry Notices   | 906  |
| On the Future of Our Designing Staffs                        | 907  |
| Aircraft Engines and High-Speed Marine Service. By H. Massac | 908  |
| Bulst  | 909  |
| Air Mails  | 909  |
| Reports and Memoranda  | 909  |
| The Air Ministry Competition at Martlesham                   | 910  |
| A Modern Flying School                                       | 911  |
| Civil Aviation   | 913  |
| Review   | 915  |
| Personals  | 915  |
| Airships from the Four Winds                                 | 916  |
| The Royal Air Force  | 918  |
| Model Aeroplanes   | 919  |
| Sidewinds  | 920  |
| Imports and Exports  | 920  |

### DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

|                    |     |  |
|--------------------|-----|--|
| Aug. 3             | ... | Air Ministry Competition (Large and Small Type Aeroplanes)   |
| Sept. 1            | ... | Air Ministry Competition (Seaplanes)   |
| Sept.              | ... | International aviation week (with competitions) at Brescia, Italy  |
| Sept. 8, 9         | ... | Fédération Aéronautique Internationale Conference, Geneva  |
| Sept. 18-19        | ... | Schneider International Race, Venice   |
| Sept. 27 to Oct. 2 | ... | Gordon-Bennett Aviation Cup, France  |
| Oct. 1, 2, 3       | ... | A.C.F. Meeting at Buc  |
| Oct. 7             | ... | Lecture on "Civil Aviation," by Sir F. H. Sykes  |
| Oct. 21            | ... | Lecture, "A Comparison of the Flying Qualities of Single and Twin-Engined Aeroplanes," by Squadron-Leader R. H. Hill |
| Oct. 23            | ... | Gordon-Bennett Balloon Race, Indianapolis, U.S.A.  |
| Oct. or Nov.       | ... | U.S. National Aeroplane Race (New York to San Francisco)   |
| Nov. 1             | ... | First Open Competition for R.A.F. Boy Mechanics  |

## EDITORIAL COMMENT



It will be within the recollection of many of our readers that the Imperial Government, at the end of the War, presented certain aircraft to the various Dominions. The Governments concerned for the most part accepted the gift of these machines, and have since put them to good use in the organisation of Dominion air forces. A notable exception seems to be the Government of the Union of South Africa. According to the *Rand Daily Mail*, the Union Government accepted a hundred aeroplanes and four airships, of a value of £1,750,000—by no means a small gift. These machines, it is said, are, after an interval of twelve months, still housed in their packing cases. The gift, says the South African paper, seems to be one of the white elephant order. The Union Government does not seem to know what to do with it. Having got the hundred machines for nothing, it was discovered that they could not fly without fuel; the Government asked for that and got it. Spares, oil, and motor-vehicles for use as tenders were needed and asked for. Again the Union Government asked and received. Motor repair shops were requested and granted. Then, the Imperial Government "more or less lent" Col. van Ryneveld and Capt. Brand to the Union Government, and then came the historic England to the Cape flight. The *Rand Daily Mail* says, in this connection: "It is now a matter of history that one of the machines then and now boxed up at Roberts' Heights had to be produced to enable them to put the final touch to their undertaking. Col. van Ryneveld, on arrival at Capetown, was packed off (figuratively at least) to complete the job of picking up details, and when this concluded to return to South Africa as commander-in-chief of our aviators. There are in South Africa several hundred men who won distinction in the crucial test on the western front. They are in civilian posts today. Their training, second to none in the world, is being wasted. No effort is being made to train South Africans for a Union aviation corps. The Union Government has but one flying officer, Col. van Ryneveld. When it was necessary to go

to his help members of the R.A.F., in the service of the Imperial Government, had to be requisitioned. The Union Government has not today a flying officer in South Africa. It is fair to ask, what is the Government's policy—in the event of its having any."

It is far from our desire to create anything in the shape of bad blood between the Mother Country and any of the overseas Dominions, but if the statements made by the *Rand Daily Mail* are correct—and they seem to be—we can only say that the position in South Africa is, to say the least, deplorable. It is not for us to dictate to the Union Government what its aviation policy shall be, or even whether it shall have one at all. But what does irk is that there is a round £2,000,000 of the British taxpayers' money lying idle in the shape of gifts which South Africa accepted with avidity and now does nothing with. To say the least, it seems scarcely fair to the Homeland. The Union Government was surely in a position to know before it accepted the gift whether it intended to organise a flying force or not. If it did not, then it could have said so, and the machines could have been put to some other use. All we can say is that the position in South Africa is in marked contrast to that in Canada, where the gift machines sent over by the Imperial Government are being put to the best possible uses, and where new work is being found for them every day. We may perhaps venture the hope that the conditions at the Cape are not quite as bad as the very circumstantial story we have quoted would lead us to think.

#### Germany and the Air

There need be little wonder that the French view with profound disquiet the preparations which are being made in Germany for the creation of a great commercial air fleet. Nothing has transpired since the war to convey the idea that the new Germany is any better than the old, or that she can be relied upon to keep her pledged word. In fact, all the evidence goes to show that Germany is quite unregenerate and unrepentant, and that there are very powerful elements within the Republic which are planning and working for revenge. Nor do these elements make any secret of their designs. On the contrary, they are fond of proclaiming them to the whole world. It may be, of course, that this is mere bombast, born of the desire to discount Germany's gigantic failure and defeat—the "we shall-do-better-next-time" idea. But, unfortunately, when we are dealing with a country and a people like our late enemy it is impossible to take these things any way but seriously. We know what German faith is worth. We know the German habit of arrogant boasting, and we know that it was this habit which gave us a warning that we ought not to have neglected before 1914. It was only the boasting habit which led the Germans into telling more or less the truth about their intentions.

The question which a great many are asking is: Are we to take seriously the bombastic talk from Germans about another attempt to secure world power after an interval for recuperation and preparation? Unfortunately, as we have said, we are afraid we cannot afford to take it any other way. The most certain way of provoking another great war would be to treat this talk as idle boasting and to allow Germany to go on preparing without taking counter-measures. In a recent interview, M. Henry Farman expressed grave doubts as to Germany's intentions.

"I cannot help wondering," he said, "whether it is possible to believe that Germans today are constructing planes for peaceful purposes. I cannot help feeling a grave mistake was made at the Peace Conference as regards aircraft. The Germans were forbidden to construct war machines, but were not forbidden to build other machines that in case of war could be transformed, almost immediately, into attacking squadrons. Unfortunately, the Germans understood better than we did the future importance of aircraft in war."

There is no question but that M. Farman is perfectly right to feel as he does. He simply reiterates a warning which we ourselves and others have uttered many times since the conclusion of "Peace." Unfortunately, we do not think it would have been possible to forbid Germany to build machines for commercial purposes, any more than it would have been possible to forbid her to build a merchant marine. After all, even Germany has got to live, and she cannot live as she should unless she is afforded means for commercial expansion. Aircraft means communications, and communications are vital to the existence of any organised—we will not say civilised—State, nor can we logically deny the right of any such State to develop them, principally for the reason that we want ourselves the facilities given by such development. But whichever way the argument lies, the main fact remains that Germany has been accorded the right to build commercial aircraft, and is planning to construct on a very large scale. The plain answer to her plans is a correspondingly large programme of our own. By that we do not mean the creation of a huge and expensive Air Force, but a well thought out scheme of commercial expansion which will entail the construction and use of an aerial fleet large enough to put it out of the question for Germany to attack us at any time with the slightest hope of success. If this country really had any settled policy regarding aviation, the German menace, for whatever it may be worth, would leave us cold. But we do not seem to have any, and appear to be falling into the state of apathy which led us into a war for which we were quite unprepared and which cost us a million lives and £8,000,000,000 of money. Shall we ever forget anything or learn anything?

#### Making Airways Pay

The *Times* has recently published a series of articles, under this heading, in which Mr. Frank Searle of the Airco services gives his views on the subject of commercial aviation. Mr. Searle is well known as a transport authority, principally by road, and has now turned his activities in the direction of aviation, in the future of which he obviously has a profound belief. He has very pronounced views on construction, which seem to be very sound. The War certainly produced a strong tendency in engine design to sacrifice a good deal to lightness combined with power, and that tendency will remain for some time, though it is clear that there must be some limitation placed upon it if commercial aviation is to succeed. Mr. Searle's idea is that it is better to sacrifice the weight of one passenger and put that weight into the engine in order to obtain real commercial dependability, than to carry a bigger load and have trouble with the motor. That is perhaps a truism, but it is a point of view which should be considered by the designer who is inclined to allow war practice to sway his mind towards a



## The Camera and the 'Plane



Eastbourne and pier as viewed from an Avro 'plane over the sea

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high power-weight ratio. Not that the latter should be disregarded by any means, because what we want is a motor which combines the qualities of robustness with the greatest possible power output in relation to weight, always keeping in mind that absolute reliability in the air is the prime consideration. Without that absolute reliability there is nothing in commercial aviation. More so is it essential than in any other form of transport, because of the different conditions. The engine failure that in land transport merely means delay and inconvenience may be fraught with the most serious consequences in the air.

As to machines, Mr. Searle seems to think that the aeroplane of the immediate future should be built mainly of wood, with wooden wings, in preference to metal. As to that we have a perfectly open mind, but the idea seems to us to be a little revolutionary if nothing else. Such a construction would certainly have the merit of durability, in comparison with the fabric covered wing of convention, and it would be easy and cheap to repair in case of minor accident, but we should require to be convinced of its safety in the air. So much, however, has been done of late in wood-working that it is quite possible the use of ply-wood for wings is not open to any objection that matters. Again, he favours the development of the monoplane for commercial transport. From the point of view of the commercial manager of a civil aerial transport company, there is a good deal to be said for the simplified monoplane form of construction, but there are other considerations to be taken into account. Safety is once more the paramount factor in commercial aviation. The monoplane had a great vogue at one time, but it manifested inherent weaknesses, not all due to want of proper material or of essential knowledge of stresses, which ruled it out when power and lifting capacity increased beyond a particular point. Once more, we should require a great deal of convincing that the monoplane as a type is likely to prove suitable for commercial services. In saying this we do not for a moment desire to be dogmatic. It is again the case of the open mind.

### An International System

Mr. Searle seems to be on firmer ground when he comes to deal with traffic systems. He thinks that we shall never do any good with commercial aviation until we get a better international system than we have to-day. Again, that is a truism. Today we have practically nothing that can be called an international system. Time has been too short and aviation as a commercial proposition has not even begun to feel its feet. Mr. Searle's idea is that all goods for aerial transmission overseas should be packed in special containers which can be easily handled, and transferred from machine to machine. But it is obviously no use having such containers unless there is unified action among the air transport companies of Europe to provide approved good machines of a definite type. We want to be able to send a load anywhere in Europe by air, and to do so not only quickly but at rates which, while attractive to the consignor, still leave a reasonable margin of profit. We shall never reach this stage unless we have close co-operation between the commercial flying interests of Europe. A conference, he thinks, should be called at once. We should prepare and agree on the plans for an aerial cargo-carrier of a type sufficiently sound and practical to take us over the next few years, and should arrange for the handling of goods in approved containers on all main aerodromes in Europe.

That is sound and excellent in theory. Nor do we see any reason why there should be any practical difficulty in the way of its consummation. The main thing is to get together such a conference as Mr. Searle suggests. There is nothing like starting properly, and now, at the virtual beginning of things, is the proper time to make all these arrangements. To wait until things have grown up haphazard—like the railways—is to sacrifice efficiency at the beginning and to incur costly changes later on. There are many more things that can usefully be discussed by such a conference as has been suggested, and we trust that before long the appropriate bodies concerned will take the necessary steps to call it.

## AEROPLANES FOR INDIA

THE following *communiqué* has been issued by the Department of Commerce of the Government of India:—

"The Government of India have recently received representations from the principal chambers of commerce on the subject of assisting the development of civil aviation in India by reduction of the Customs duties levied on aeroplanes. They have for some time past had this question under consideration, and have now decided to reduce the import duty payable on aeroplanes, aeroplane parts, aeroplane engines and engine parts from  $7\frac{1}{2}$  per cent. to  $2\frac{1}{2}$  per cent. *ad valorem*.

"This concession will have retrospective effect so as to include imports on which excess duty has already been paid. Further, in order not to hamper or discourage long-distance

flying, which is at present only in an experimental stage, the Government of India have authorised the maritime local governments to exempt aircraft arriving in India by air from the payment of duty when they are satisfied that the aircraft are to be used merely for the purpose of flight across India and are not intended to be retained in the country.

"Before this exemption is granted the person in charge of the aircraft will be required to make a written declaration or to execute a bond that the condition laid down above will be fulfilled."

Notification No. 3,444 gives effect to the reduced rate of Customs duty specified above in respect of imported aeroplanes aeroplane parts and aeroplane engines and engine parts.

### International Aero Exhibition at Prague

THE Czechoslovak Aero Club is organising an International Aero Exhibition, to be held in Prague, under the patronage of the President of the Czechoslovak Republic, T. G. Masaryk, from Oct. 23 to Nov. 2. In view of the importance which is attached in some quarters to the possibilities of Prague as the junction of all the projected principal aerial lines of Europe, it is hoped that the exhibition, the first of its kind in Czechoslovakia, will be a great success. Many of the big firms of the neighbouring countries have shown considerable interest in the exhibition and promised

that they will take part. There is at Prague a big aerodrome under construction, and in connection with the exhibition it is proposed that passenger- and freight-carrying services should be carried on.

The address of the exhibition offices is Prague-Vinohrady, Slezska 18, Republic Czechoslovak.

### The Gordon Bennett Balloon Trophy

It is stated that the American eliminating trials on Sept. 11 and the competition itself for the Gordon Bennett Balloon Trophy on Oct. 23, which were to have been held at Indianapolis, will now be held at Chicago.



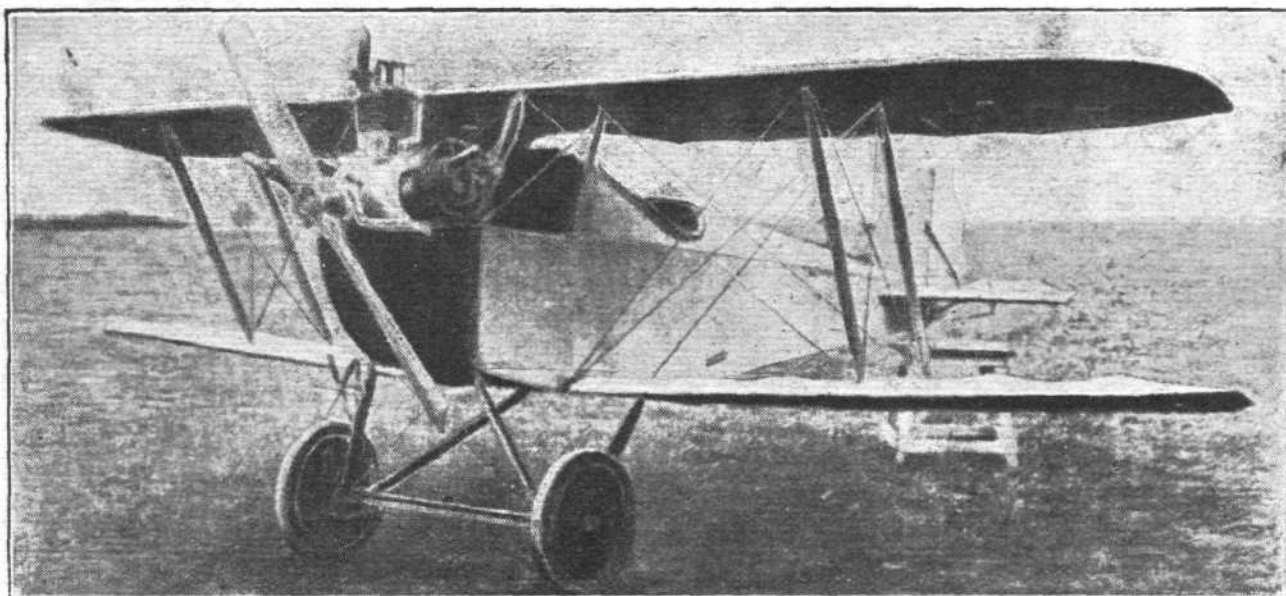
# THE AUSTRIAN W.K.F. SPORTING BIPLANE

THAT the small sporting aeroplane, with low-powered engine, is entitled to a by no means small share of the attention given to future progress in aviation is borne out by the recent remarkable, but none the less practical, performance of Mr. Hinkler and his Baby Avro-Green combination, and by the results obtained from trials with machines of this class in various countries. The possibility of a small machine capable of being easily stored—as Mr. Handley Page remarked, in the coal shed!—easily and safely flown, having a moderate initial cost, and a running cost as low as (if not lower than) an ordinary motor-car, will not only have a great future before it, but is more certainly a feasible proposition. We still have much to learn on this subject—for one thing we must

had obtained some five years of valuable experience in aircraft construction during the War, and immediately after the Armistice set to work on the design and construction of commercial machines.

One result of their efforts is the small sporting biplane in question, which possesses several remarkable features. The most prominent of these is, perhaps, its range of action, which is stated to be about 800 miles, or a duration of 10 hours.

Some difficulty was experienced at first in obtaining a suitable engine for this machine, and during the preliminary trials, in the Spring of 1919, a 30-35 h.p. Haacke three-cylindered fan-type air-cooled engine was installed—the machine illustrated being so fitted. We understand, how-



Three-quarter front view of the W.K.F. Sporting Biplane

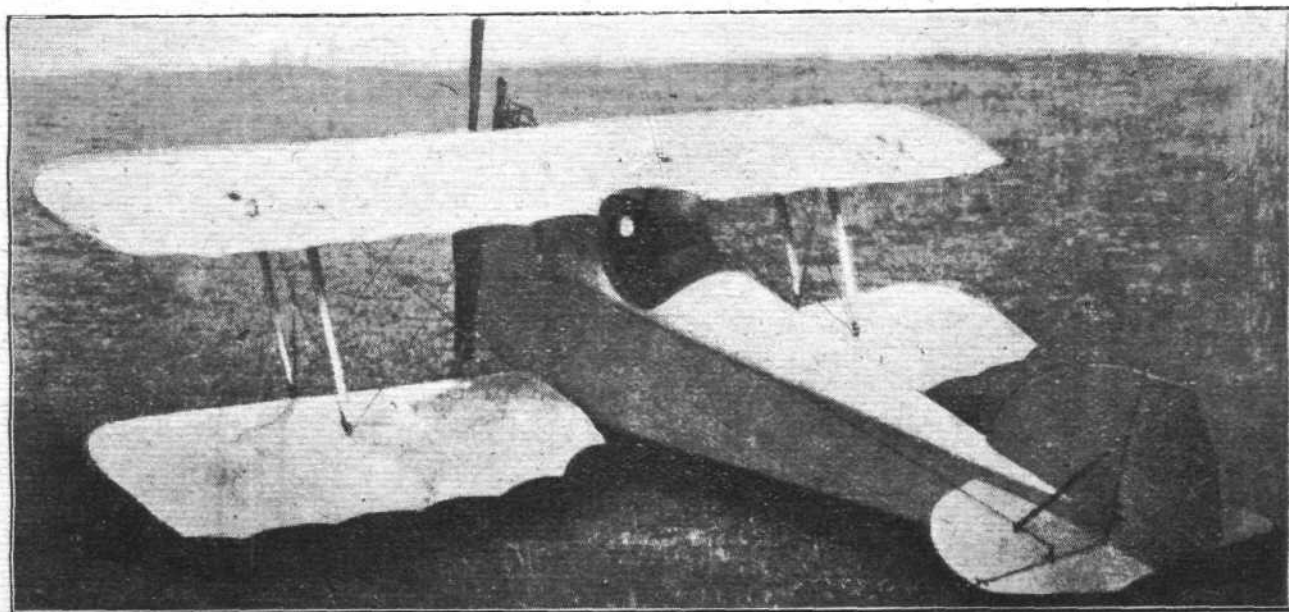
disassociate ourselves from war practice; when performance was more or less the only consideration.

Any efforts along these lines should, in our opinion, receive every encouragement and exhaustive investigation. It is our intention, therefore, to publish particulars of as many of these types of aircraft as possible, and thus record how various designers tackle this very interesting problem.

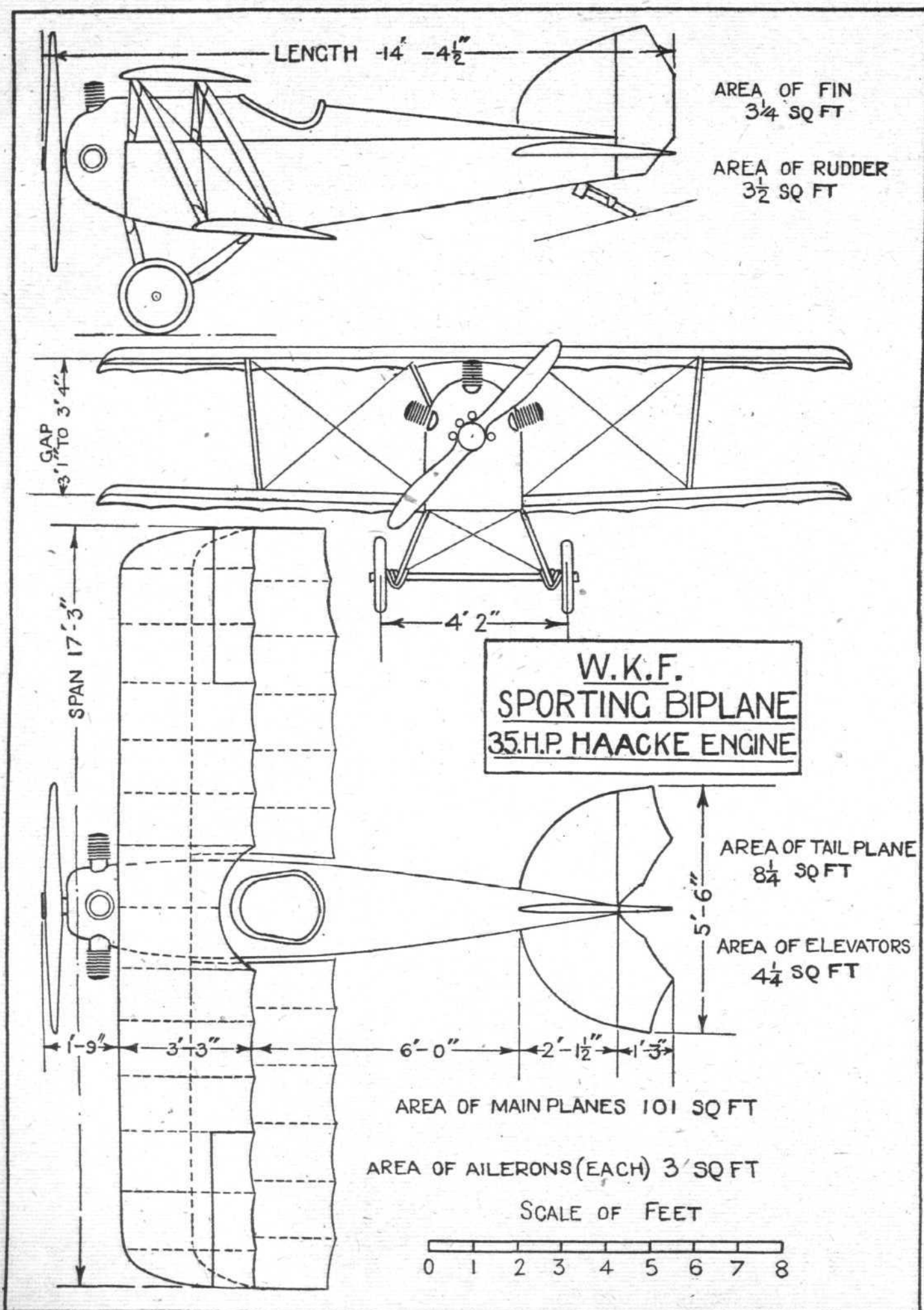
This week we give some particulars, together with scale drawings and photographs, of a small sporting biplane built by the Austrian firm of W.K.F. (Wiener Karroserie Fabrik), motor-body and aeroplane builders in Vienna. This firm

ever, that it is the intention of the firm to construct their own engines, specially for the machine, in the future.

The *fuselage*, of rectangular section, is built up of three-ply in the simplest possible manner, and although of fairly large cross-section it is exceptionally strong and light—weighing only about 37½ lbs. The first bulkhead of the *fuselage* consists of a wooden panel, 10 mm. thick, which separates the engine from the pilot. This member also carries the engine supports, and the rudder bar. The pilot's cockpit is large and roomy, and ample protection from the elements is provided. The range of vision in all directions is exceptionally good,



Three-quarter rear view of the W.K.F. Sporting Biplane



THE W.K.F. SPORTING BIPLANE : Plan, side and front elevations to scale



owing to the low position and forward stagger of the top plane.

A metal cowl encloses the nose of the fuselage and the engine, the latter having its cylinder heads projecting outside. The main petrol-tank is situated immediately behind the engine, and a small auxiliary tank is mounted behind the main tank. The latter has a capacity of 19.8 gals., and that of the auxiliary tank just over 2 gals. The oil-tank is mounted above the engine, and is of fairly large capacity, to meet the requirements of a long flight.

The main planes are of equal span and chord, and the top plane, which is staggered forward nearly 1 ft. 9 ins., is straight, whilst the lower plane is set at a dihedral angle of about  $2^{\circ}$ . The top plane is in one piece, and is supported above the fuselage by two pairs of struts. The lower plane is in two sections, each being attached to the lower longerons of the fuselage. Upper and lower planes are separated by one pair of interplane struts each side. Ailerons of tubular steel construction are fitted to the top plane only. Both planes are of simple construction, the front main spar, of  $\square$  section, forming the leading edge, and the trailing edge is formed of steel wire. The rear spar is, we believe, of box-section. The ribs, of which there are 13, are equally spaced.

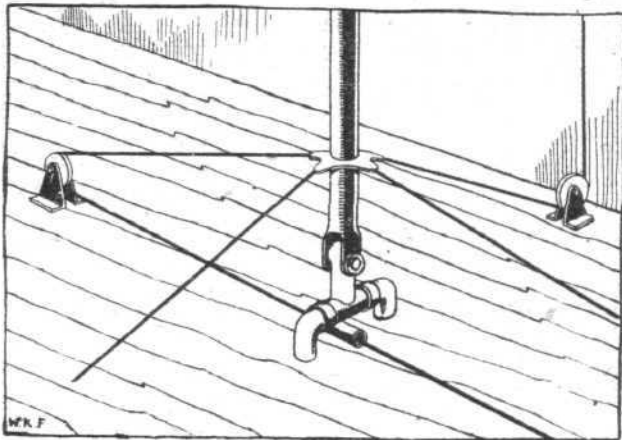
The tail plane, which is semi-circular in plan form, has a cambered upper surface, and is mounted at  $0^{\circ}$  angle of incidence on the line of thrust. It is braced top and bottom by steel tubes. The elevators are divided, and the rudder is hinged to a vertical fin of moderate streamline section. These surfaces are, it appears, of steel tube construction.

The control is extremely simple, as may be seen from the accompanying diagram. The "stick" consists of a tube terminating at its lower end, where it is attached to the floor of the cockpit, in a universal joint, and having four lugs mounted on it a short distance above the latter. From two of these lugs cables are led to the port and starboard ailerons respectively, whilst the other two lugs form attachments for the elevator cables—one of which is led forward over a pulley mounted on the floor in front of the control column, and thence rearward, the other cable passing direct to the elevator crank arms.

From a constructional point of view, the landing-gear forms, perhaps, one of the most interesting features of this machine. The chassis itself is of the orthodox V type, with wood struts. It is in the wheels that a somewhat novel—and, we rather fancy, unique as far as aircraft are concerned—arrangement is employed. By the use of extremely resilient springs for the shock-absorbers, it has been found possible to dispense with the usual pneumatic-tyred wheels, and use in their stead solid wooden wheels! These consist of wooden discs, with metal hubs, the felloes, made in the form of pneumatic tyres, being of oak. In size the wheels are uniform with usual practice, being  $760 \times 100$ .

A tail skid of the orthodox pattern is mounted at the tail end of the fuselage.

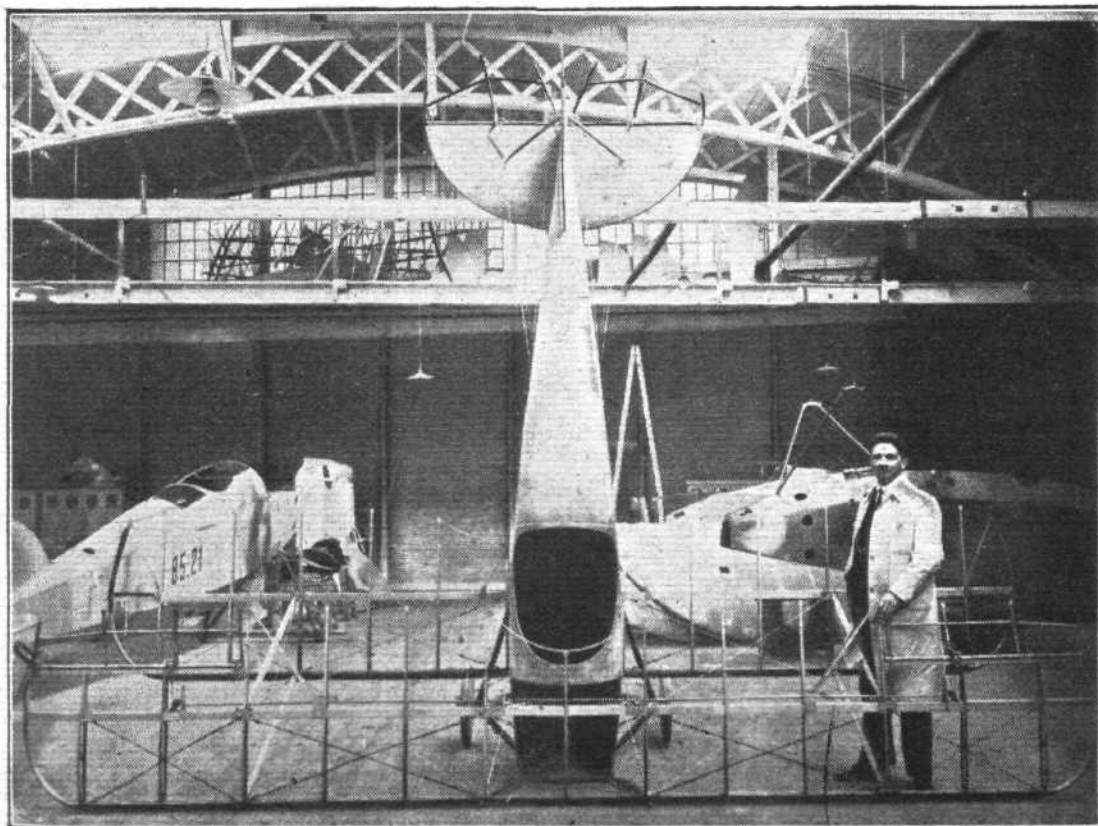
During the first trials, which were carried out at the firm's aerodrome, the machine exhibited very good flying qualities, being stable, and easy to fly. We have no information as to its landing speed, but judging from its loading and maximum speed (81 m.p.h.), we should say that it would not be particularly low.



THE W.K.F. SPORTING BIPLANE: Diagrammatic sketch of the simple control gear for the ailerons and elevators

The following are the principal characteristics of this machine:—

|   |                             |
|---|-----------------------------|
| Span .. .. .                              | 17 ft. 3 ins.               |
| Chord .. .. .                             | 3 ft. 3 ins.                |
| Gap .. .. .                               | 3 ft. 1 in. to 3 ft. 4 ins. |
| Stagger .. .. .                           | 1 ft. 9 ins.                |
| Overall length .. .. .                    | 14 ft. 4½ ins.              |
| Overall height .. .. .                    | 7 ft. 0 ins.                |
| Area of main plains (inc. ails.) .. .. .  | 101 sq. ft.                 |
| Area of ailerons (2) .. .. .              | 6 sq. ft.                   |
| Area of tail plane .. .. .                | 8½ sq. ft.                  |
| Area of elevators .. .. .                 | 4½ sq. ft.                  |
| Area of fin .. .. .                       | 3½ sq. ft.                  |
| Area of rudder .. .. .                    | 3½ sq. ft.                  |
| Weight fully loaded (approx.) .. .. .     | 740 lbs.                    |
| Fuel capacity (10 hrs.) .. .. .           | 22 gals.                    |
| Loading per sq. ft. .. .. .               | 7.4 lbs.                    |
| Loading per h.p. .. .. .                  | 21 lbs.                     |
| Speed (max.) .. .. .                      | 81 m.p.h.                   |
| Engine 3-cyl. 30-35 h.p. Haacke or Hiero. |                             |



Plan view of the W.K.F. Sporting Biplane, showing the main planes in skeleton

## AERO-ENGINES AT THE CRYSTAL PALACE

Some Developments and Greater Possibilities

BY ARTIFEX

(Concluded from page 887)

### The German Section

FROM almost every practical standpoint—for once, even that of graceful modelling, to say nothing of a detail simplification that is all of the Italian fashion—one of the best aero-engines in the whole collection, especially in the intermediate-powered division, is the 200 h.p. Maybach, of which four examples are to be seen. If compactness for power is to be considered a prime quality—and this is more important in the case of a "six" than in a "V" of eight cylinders with the overall length of four—we cannot have it better, or more like a monobloc with the convenience of unit assembly, than the Maybach practice originated by Spyker, of open-ended water-jackets butted together to make a continuous water-stream; but improved in this case by something better than a mere face-joint, a gasket tightened leak-proof by a half-inch wide clamp ring. We see, too, the utmost made of this all but pipeless system of water-circulation, by the way in which a water-jacketed carburettor is butted against each end-cylinder, so that the water entry can be made from the pump inside the forward arm of the crank-chamber *via* a sleeve-union at the back of the main exhaust outlet casting; hence through the exhaust manifold water-jacketing into that of the rearward carburettor, and on through the cylinder jacketing, with a corresponding

on the induction side—have cam-like forks that seize these tappets and so lift the valves, either to ease starting or—in the more usual air-ship function of this model—to suspend running for a few minutes.

The starboard view shows, in front, the location of the oil-pump, which, otherwise embodied in the forward crank-chamber arm, is of the plunger type with its spindle—that actuates the plungers in the familiar cam-and-loop Maybach fashion—gear driven at about 1 to 4 from the front end of the inlet camshaft. The connections are, however, external, as from the main distributor pipe shown, to branches between the cylinders, which uncommonly enough deliver the oil *above* the crank-shaft journal bearings, instead of below, the intention of this being to ease the oil entry instead of it meeting the resistance of the generally downward thrust upon the crankshaft, which latter is hollowed so that it may carry the oil forward to the big ends, and thence again through the hollow connecting rods general in Maybach construction to the cylinder surfaces.

Much in the same way, the rear end of the inlet camshaft affords the drive to the Bosch magnetos, which, instead of being platformed transversely as usual in aeromotor practice, stand parallel to the motor-line on the rearward crank-chamber arm and an extension thereof; their common



INDUCTION AND EXHAUST SIDE VIEWS OF THE 180 H.P. SIX-CYLINDERED OPEL: A useful War-production proposition of little merit for general aviation, and a particularly bad example of exhaust manifolding; but with an excellently located lubrication system

outlet—just visible—from the jacketing of the forward carburettor, all as shown in the port-side view.

Equal simplicity is seen in the starboard-side view, in the induction from the carburettors at either end by what is practically a single omnibus bar manifold, with the controls connected up to the single drum on the central bracket, which also contains the ignition switch, "off" and "on," as the cable connections show. Also it will be seen that a continuous priming-lead is fitted, drawing in the first place from a duct in the body of the forward carburettor, and formed, through a series of rubber connections, to "doping" injectors in the centre of each cylinder head, a simple syringe connection at the end—not shown—affording sufficient suction for priming, the plugs for the duplicated ignition being set in on either side of each injector.

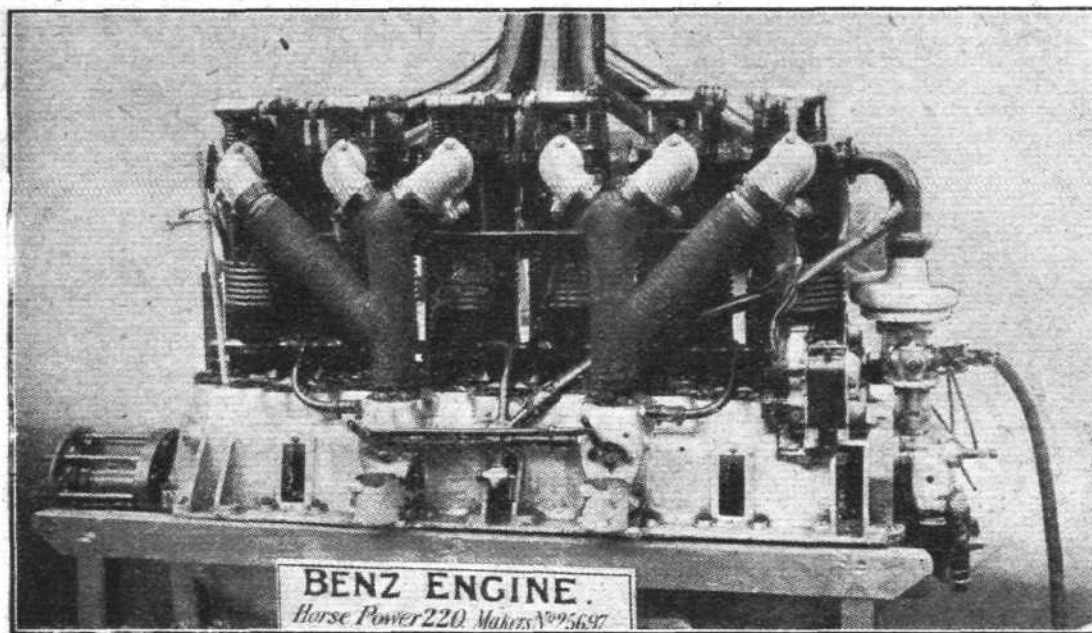
Again, short of singly detachable valve-bearings or box-seatings, where in contemporary aero-engine practice do we find the great essential of individual valve-detachability and replacement so effectively-carried out as in this example of narrowly T-headed cylinders, with two inlets and two exhausts, from which one has simply to remove a cap and free a spring-cotter as in car practice, disturbing nothing else? Each pair of valves in this Maybach example is actuated by a T-headed tappet from adjustable points; but the lay-shafts on either side—which are rocked from the large bell-crank hand lever seen below the control drum

drive from the camshaft being through encased helical gearing on short intermediary stubs. Thus the only further constructional feature in so straightforward and simple a design is that the dogs or yoke pieces that attach the cylinders are carried by the bolts that suspend the crankshaft bearings. Short of verification, not yet apparently available even to officials, one would approximate cylinder dimensions at some 6½ in. bore by 7½ in. stroke, for 200 h.p. at about 1,200 r.p.m., with the possibility of much greater power at higher speeds with a geared-down propeller, or an equally permissible lengthening of stroke, with no increase of overall length or loss of a compactness more marked than any other of its type.

The 250 h.p. Maybach—the most powerful in this section—resembles the one just described in regard to its induction, but differs in having its valves—four for each cylinder—set vertically into flat curved heads, and operated by dualised rockers and grouped tappets, the valves being non-detachable without dismounting the cylinder and its connections, and in having its water-joints merely duplicated between each cylinder head. There is also a 160 h.p. six-cylindered Maybach in which much the same modelling and detail practice prevail.

Otherwise the ablest-looking engines in this section are the 270 h.p. Basse-Selvé six-cylindered model—so extensively described in these columns some months ago that one need



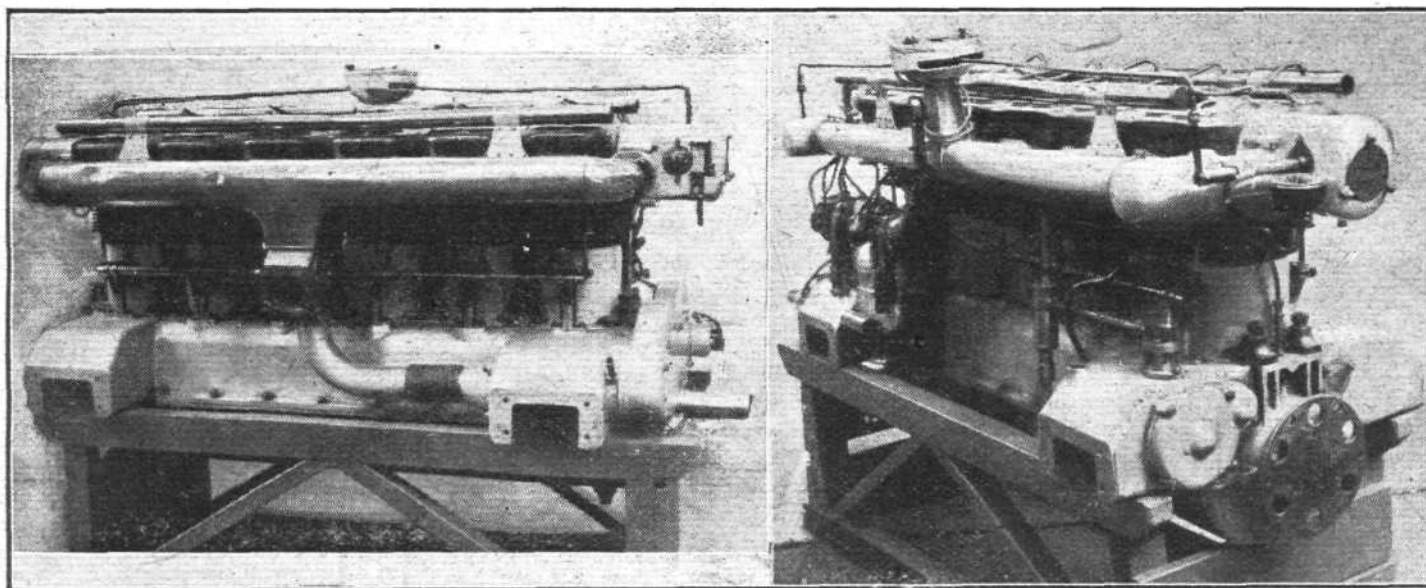


The 220 h.p. six-cylindere Benz : One of Germany's most carefully refined models, highly elaborated for effectiveness rather than any other engineering merit

hardly repeat its not unconventional detail—and the 220 h.p. Benz, also of six cylinders. This latter would appear to have the longest stroke in the whole collection: one of approximately  $7\frac{1}{2}$  ins. with a bore of about 6 ins. The concertina moulding of its sheet steel welded-in jackets and its obviously fine-drawn make-up give it a distinctive appearance, but except that its water-joints, clamped and gasketed, are single between the cylinder heads, the valve arrangement and setting resemble Maybach practice in the valves being vertical, non-detachable without cylinder dismounting, and actuated in pairs by the same sort of dualised rockers and paired tappets. A further feature of the water circulation is the extreme depth of the water-jacketing, and the side-wise location of the lower water connections jointed in line through rubber unions. These, however, would appear—reversing the usual method—to be the outlets, with the inlets direct to and through the heads, judging from certain other, German also, practice in this regard, and still more from the conformation of the centrifugal pump. The vertical spindle of this pump is driven direct from bevel gearing on the tail of the crankshaft, and through helical gearing drives a transverse spindle with bevel drives to the magnetos set parallel to the cylinder line. Lubrication detail apparently is the same as in previous Benz practice, direct from a series

of encased plungers through gallery-leads cast or drilled in the crank-chamber metal to all main bearings, thence into a hollowed crankshaft to the big ends, and finally up the connecting rods to the cylinder surfaces, all of which seems inevitable in so large a motor that displays no other method of lubricating the latter effectively. The other noticeable features are the special formation of the breather recesses in the crank-chamber, and its incorporation of the jet and throttle chambers therewith, and the peculiar branch-like form of the tripartite induction, wholly different, both in form and distribution effect, from the conventional manifolding. It will be seen, too, that each carburettor—as formed in the crank-chamber metal—is hot-water jacketed direct from the lower water connections of the cylinders, and that both these and the main inlet are connected by a diagonal tube that suggests water-temperature control—variable according to conditions—as from the union and return pipe between the carburettors. Thus the whole design appears effective; a conception, at least, that one is not encouraged by average examples to believe would be more handsomely treated in British practice.

One imagines, however, that our designers would not be betrayed for any favour into imitating anything like the 240 h.p. Mercedes, which, with its eight cylinders in line,



Exhaust and Induction side views of the 200 h.p. Maybach six-cylindere engine : Chiefly used for airships, but no less suitable as an aeroplane unit. Features are the almost pipeless and continuous water-circulation, in and out by way of the exhaust manifold water-jacketing and that of the carburettors at each end, from the pump inside the forward crank-chamber horn-plate. In the right-hand view the neat duplicated omnibus-tube induction, the centralised throttle and ignition control, and the valve cut-out lever rocking the lay-shaft to lift the T-headed tappet-risers of the valves—individually detachable as in auto engines—are all notable features. The use of the forward crank-chamber arm to house the oil sump, and the compact magneto installation aft, as well as the doping pipe along the cylinder crowns, will also be remarked

exhibits everything in mass construction that an aero-engine should not possess: although detail work is neat enough, and the induction arrangement of a manifold of four to the middle four cylinders from one carburettor, and another to each end pair from the other one, certainly shows a sound appreciation of the necessities of the case, to make the best of a job that is not only bigger, but wholly clumsier than another of the same make and power taken from a Rumpler machine shot down in Gostaverne Wood. This latter had its propeller direct driven, and its valves—four to each cylinder—actuated by T-headed rockers formed in the Basse-Selve manner, and bell-cranked very neatly into the casing of the overhead camshaft.

A general effectiveness due to constructive experience may be well granted—rather than to any merit of design—to the 180 h.p. six-cylinder Opel: a suitability, that is to say, for the extravagance of military service rather than anything suggestive of competitive rivalry in commercial aviation. There is nothing that can be said against the workmanship with which these six-paired cylinders have been mounted, with their sheet steel-welded jackets; and if the defect of absolute non-detachability *per se* of the valves be exaggerated by the pairing of the cylinders, the valve-gear action and detail generally are sound, though conventional, and likely to be noisy, and both the induction and exhaust manifolding are straightforward and do not encumber the mass—albeit the trumpeting of the outlets of the latter will certainly not help the power output. The magneto drive, as from a vertical spindle bevel-gear driven from the tail of the crankshaft, is also along accepted lines; but for what reason an accessory of such prime importance as the centrifugal water-pump should be located so low, so awkwardly for installation, and so inaccessible in aero conditions, wholly transcends imagination. Actually one finds the best feature of the whole design in the depth of the central oil sump in the base-chamber and

the location of the pump therein as the best possible for subsequent even distribution.

On the other hand, with the single exception of the afore-said 200 h.p. Maybach, one sees more conscientiously original study, so far as it goes, in the six-cylindered Hiero engine than in any other in the section. There is but one other—an American—in the known aero-engine practice of today with the vertical driveshaft to the overhead camshaft so appropriately placed, not at one end, but in the middle, so as to equalise the thrust both ways to the bearings of the latter—and to the entire valve action—as well as upon its own. Again, its upper extension drives a centrifugal oil-pump, the location of which—even had it not been fully justified for other reasons by Bugatti practice—at least assures even distribution all over the engine; which thus—as few others are to the same degree—is built round its lubrication, the main essential in aero-engine design. And this result, one sees, is assisted in a manner Italian conception could not have bettered by the fact that the hollow of the drive-shaft itself constitutes a protective housing for the main oil conduit from the central base-chamber sump, first of all, and then a return-drain from the valve-gear. And lastly, a bevel carried at its lower end affords a direct drive for magnetos neatly housed on the crank-chamber on either side. Were it complete indeed, one would probably find this Hiero model better worth study than anything else in this section, if one may judge by what still remains. Withal, unit mounted as its cylinders are, its over-all length is not at all excessive.

Some dozen others, of various sizes and powers, and mostly of Mercédès make, do little more than amplify an otherwise interesting collection of War-trophies that, with the exception of the Maybach and the Hiero, display little of value for prospective study, as compared with the Allied section opposite.

## AERODROMES AND

ADDITIONS and amendments to Notice to Airmen No. 81 (Consolidated list of Aerodromes) of July 20 are as follows:—

LIST C. (b).—Civil Aerodromes licensed as "Suitable for Avro 504K and similar types of aircraft only."

Except in very few instances accommodation does not exist. The licences have also been issued for limited periods only. Foreshore aerodromes are not included.

The following aerodromes are published as additions:—

| Aerodromes.    |                |               |                         |
|----------------|----------------|---------------|-------------------------|
| Name.          | Lat.           | Long.         | Height above Sea Level. |
| Lincoln..      | 53° 13' 40" N. | 0° 30' 0" W.  | 20 ft.                  |
| Scarborough .. | 54° 30' 0" N.  | 0° 24' 0" W.  | 400 ft.                 |
| Gt. Yarmouth.. | 52° 35' 0" N.  | 1° 44' 0" E.  | 20 ft.                  |
| Pinhoe, Exeter | 50° 44' 30" N. | 3° 28' 30" W. | 300 ft.                 |

The particulars regarding the following aerodrome should be amended to read as follows:—

|                               |              |         |
|-------------------------------|--------------|---------|
| Blythe Bridge, 52° 57' 30" N. | 2° 4' 30" W. | 610 ft. |
| Longton.                      |              |         |

(Notice to Airmen No. 86.)

## LANDING GROUNDS.

LIST B. (a).—Permanent Service Stations

Scopwick.—The name should be altered to Digby.

LIST B. (b).—Stations temporarily retained for Service purposes

The particulars regarding the following aerodromes should be amended to read as follows:—

|                    | Lat.          | Long.         |
|--------------------|---------------|---------------|
| Barrow (Walney) A. | 54° 7' 0" N.  | 3° 15' 30" W. |
| Inchinnan ..       | 55° 53' 0" N. | 4° 26' 30" W. |

| Nearest Town.   |                                   |                              |
|---|-----------------------------------|------------------------------|
| Name.   | Distance from Aerodrome in Miles. | True Bearing from Aerodrome. |
| Lincoln, 1½ miles (G.C.R., G.N.R.)                                | Lincoln .. 1½ miles               | W.                           |
| Scarborough, 1¼ miles (N.E.R.)                                    | Scarborough 1 mile                | N.                           |
| Gt. Yarmouth, 2 miles (G.E.R.)                                    | Gt. Yarmouth 1 mile               | N.                           |
| Pinhoe, ½ mile (L.S.W.R.). Exeter, 3½ miles (L.S.W.R. and G.W.R.) | Exeter .. 3½ miles                | W.S.W.                       |

be amended to read as follows:—

|                          |                     |      |
|--------------------------|---------------------|------|
| Blythe Bridge, N. Staffs | Longton .. 3½ miles | N.W. |
| Railway, 1 mile.         |                     |      |

### What Germany has Done

In a written reply to a question by Lieut.-Col. Sir Frederick Hall, who asked for particulars of war material surrendered by Germany since the Spa Conference, or of the destruction of which the Allies have satisfactory evidence, the Prime Minister stated that with regard to aircraft, the latest figures—i.e., up to July 31—are as follows:—

|   |     |
|---|-----|
| Aeroplanes and seaplanes surrendered .. | 128 |
| Aeroplanes and seaplanes destroyed ..   | 813 |
| Airships surrendered ..                 | 1   |
| Airships destroyed ..                   | 1   |

### Sinn Fein Attack on Damaged Aeroplane

The following statement was issued by the Irish Command in Dublin on August 15:—

"At about 5.30 a.m. on Saturday, near Banteer, Co. Cork, a military guard over a broken-down aeroplane was attacked

and the sentry killed. The remainder of the guard immediately engaged their opponents, and after a fight put them to flight. The military casualties were one killed and one wounded.

"The assailants' casualties, according to the latest information, are believed to be four killed and at least three wounded."

### Wireless Research Work

Four sub-committees have now been established by the Department of Scientific and Industrial Research to assist the Radio Research Board. One will deal with the Propagation of Wireless Waves, the second with Atmospherics, the third with Directional Wireless and the fourth with Thermionic Valves.

Mr. G. I. Taylor is a member of the second, Capt. J. Robinson, M.B.E., R.A.F., of the third, and Capt. H. L. Crowther, R.A.F., of the fourth.



# OUR DESIGNING STAFFS AND THEIR FUTURE

## A Word of Warning

To those who believe that Aviation, Military as well as Civilian, will play an important part in the future of this Empire, the manner in which, for lack of encouragement, one firm after another has had to retire from the aircraft industry gives cause for the greatest misgivings. If this dissolution of designing staffs is allowed to go on one can foresee the day, and in no very distant future, when this country will be in the greatest danger of becoming hopelessly outclassed in the air. That many of the construction firms which only came into the aviation industry owing to the exigencies of war, and which only built machines to the designs of others, have had to return to their pre-War occupation is only natural. With the cessation of hostilities disappeared the demand for quantity production. In the case of designing firms, however, the matter assumes a different aspect. Probably no thinking person doubts that some day aerial transport is destined to become the recognised form of fast conveyance. If this country allows its designing staffs, brought together and grown together during the last six or seven years, to be dispersed and, therefore, lost to aviation, it will mean such a set-back in aircraft design as to reduce the Empire to a fourth or fifth rank power in the air. Other countries are forging ahead with the design of commercial aircraft, and so rapid is the progress that a few years of comparative stagnation in design will produce a leeway which it will require enormous effort to make up.

### Losing some of our Best Designers

One has not far to seek to find examples of leading designing firms which have perforce had to look to other branches of engineering for a livelihood. For instance, one of the earliest of British Aircraft firms, the Aircraft Manufacturing Co., had to dismiss its designing staff which could not be kept together indefinitely on vague promises and pious hopes only. In this way such a world-famous designer as Capt. Geoffrey de Havilland, who has created some of the finest machines of all types, and his expert staff were lost to British aviation, temporarily at any rate. We now learn that the Nieuport and General Aircraft Co., Ltd., is to close its doors, and with it such allied firms as the British Aerial Transport Co. and the Alliance Aircraft Co., Ltd., Mr. F. Koolhoven, of the B.A.T., left this country several months ago and went to Holland. He may, therefore, be "written off" as far as British aviation is concerned. Mr. H. P. Folland, chief engineer and designer to the Nieuport firm, will also represent a potential loss to our industry with the closing down of the Nieuport works.

### The Type of Men we are Losing

To illustrate what manner of men we are losing through lack of encouragement, systematised or otherwise, we cannot do better than quote briefly the main points in Mr. Folland's career, and it should be remembered that it is not the loss of a designer only, but of the staff which he has brought together and who individually have assisted in bringing to a successful issue the general ideas evolved by their chief. It is probably not generally known that Mr. Folland, before becoming actively interested in aircraft design, had nine years of automobile engineering, having served his time with Lanchester, and afterwards being connected with such well-known firms as Wolseley, Swift, and Daimler.

In the comparatively early days of aviation, Mr. Folland went to the Royal Aircraft Factory (now Royal Aircraft Establishment), at Farnborough, where he was responsible, under Capt. F. M. Green, for carrying out the designs of such machines as the S.E.2, an 80 h.p. "Tabloid," S.E.4, R.E.1, F.E.2A, S.E.5, and numerous other machines in the design of which he took part. Of other of Mr. Folland's work mention may be made of the small monoplanes built

to test Mr. A. M. Low's design for wireless control. All the designs have been of the fast high-speed type, and he may be said to have helped in no small measure in the placing on a solid engineering footing of the modern fast machine. The experience gained at Farnborough—and much as there has been to criticise in the collective work done by that establishment, one need only look around to the various firms to find men who have had their early training at the R.A.F., and who have since "made good"—has been used by Mr. Folland in producing some very fine machines while at Nieuport's. Thus mention may be made of the experimental B.N.1, the well-known "Nighthawk," the triplane twin-engine bomber "London," and several contemplated designs which would have seen the light of day but for the cessation of work that will take place shortly. With regard to the "Nighthawk," it might be mentioned that this machine was accepted by the Air Ministry before actually completed, the Air Ministry evidently accepting Mr. Folland's previous record as sufficient guarantee. Their confidence proved justified by the machine coming up to specification in every way and fulfilling the Air Ministry requirements. As regards the "London" triplane bomber, also built to Air Ministry specification, we understand that this machine was extremely nice to fly, possessing a great amount of inherent stability and being capable of being flown uncontrolled at maximum as well as at cruising speed.

### The Remedy

We have mentioned Mr. Folland's case—and that of his designing staff, because it furnishes a very good and one of the latest examples of the quality of the men whom we are in danger of losing. If something is not done to prevent the dispersal of such designers and their staffs, the country will soon find itself without up-to-date machines with which to compete in the world's aircraft market. What, then, is the remedy? We have repeatedly expressed ourselves against the kind of subsidies in which money is paid to private enterprise practically regardless of whether or not any effort is made to deserve and utilise in the best manner such subsidies, once obtained. It should, however, be possible to frame a form of subsidy in which the firms concerned would have to stand or fall by results. For instance, the problem might be attacked broadly in the following manner: The Air Ministry should communicate with such firms as have proved themselves capable of turning out really good original designs during the War, and ask them if they have any ideas for new types or for improvements on existing types. If the firms in question had any suggestions for machines which in their opinion represented a step forward, they should be asked to submit designs and calculations, which would be considered by the proper Air Ministry Departments. Any designs which were considered sufficiently promising should be proceeded with, and the designers asked to get out complete drawings and build an experimental machine. On the results obtained with this would depend whether or not the firm was to have repeat orders. If not the firm should be reimbursed for the amount of work done in designing and building the first machine. A firm which failed to come up to specification would soon find itself without occupation, and would then in the very nature of things have to retire from the field.

If something broadly along these or similar lines is not done, what will be the result? Obviously it will be a case of the survival of the (financially) fittest. In other words, it will be the firms with the longest purse rather than those with the cleverest designers which will survive. This can hardly be expected to tend to give us the best possible machines, and nothing but the best will be good enough if we are to compete against the best designers of other countries.

### Hendon R.N.A.S. Reunion

SATURDAY, October 16, 1920, is the date fixed for the second reunion of the Royal Naval Air Service (Hendon) Old Boys' Association, the meeting place being Anderton's Hotel, Fleet Street, E.C.4, and the roll-call at 5.30 p.m. for dinner at 6.30. The Hon. Sec., Mr. J. B. Green, 40, Dalmeny Avenue, Norbury, S.W.16, will be glad to hear from those intending to be present as soon as possible to enable the arrangements to be made.

### London-Paris Route More Popular

It is gratifying to know that the passenger traffic on the air route between London and Paris is steadily mounting up.

During the month of July 933 persons so travelled, making a daily average of 30 passengers. The continuous increase in traffic is brought out by comparison with the number of passengers carried in February, 102; March, 183; April, 198; May, 450; June, 775.





# AIRCRAFT ENGINES AND HIGH-SPEED MARINE SERVICE

## British International Motor-Boat Trophy Lessons

BY H. MASSAC BUIST

"I THINK the application of the aircraft engine to motor-boat service accounts for the great advances which have been made in the proposition of high-speed travel on the surface of the water," said Mr. Smith, the designer and builder of "Miss America," the winner of this year's race for the British International Motor-Boat Trophy. Therefore, it goes to America, where we shall challenge it next year with, among others, Sir Edward Mackay Edgar's 1921 Saunders-built boat "Maple Leaf VII."

In order to appreciate the advances achieved as expressed in terms of speed, we may reduce all to land miles an hour. Though these races were first run in 1903, the fast skimmer type of boat did not begin to emerge in notable fashion until after 1906, when the steel-built "Yarrow-Napier" travelled at 27.02 land miles an hour. The next big step was the Thornycroft "Miranda IV," single step, wooden hull, of 1910, when the speed went up to 33.30 land miles an hour, and the skimmer type came into its own. The following year, 1911, Sir Edward Mackay Edgar's Saunders-built Consuta hull, "Maple Leaf," pushed the speed up another remarkable stage to 36.161 land m.p.h.; while in the last race before the War Sir Edward Mackay Edgar's Austin-engined, Saunders-Consuta hull, "Maple Leaf IV" won at 55.70 land miles an hour.

### Engines Run Uneconomically

Up to that period the aircraft engine had not been applied to the proposition of racing motor-boats. Throughout the interval of war the sport, while interrupted in Europe, was carried on with redoubled enthusiasm in America. As a result remarkable strides have been made in hull design, especially for smooth water-craft. Among other things this has led to dispensing with rear rudders. Instead, this detail is placed amidships, in solid water where no braking effect results. Moreover, the propeller shaft is set an appreciable distance behind the stern of the hull. Thus the stern rests also on solid water. Hence it is possible to place the power plant as far back in the hull as the designer chooses. Again, the minimum angle is achieved between the propeller shaft and the bottom of the boat. Thus the boat is all but lifted. But it is not thrust vertically; the 30 cwt. weight is taken only a degree out of the horizontal by the vast forward pressure. The propellers are set so near the surface of the water that, on occasion, there is the risk of their sucking air. The power is taken from the engines forward to multiplication gear because very small diameter propellers are employed. They run much faster than the engines. In the case of the American craft the propeller shafts are unmachined. Ordinary white metal is employed for the brasses. There is no overheating because each shaft runs in cold water all the time. At the end of the two 33.084 sea mile races run this year, of a possible three, the white metal was broken up and more or less "squeezed out" of the propeller shafts of the American boats, the adapted Liberty engines of which were run practically cold to avoid sparking plug trouble. Hence there was loss in efficiency. The boats took relatively so little power to travel fast enough to beat the British craft, which had not the advantage of these new developments in hull design, that it was not necessary to run the engines beyond 1,400-1,600 crankshaft revolutions a minute against a possible engine speed of over 2,000. Further, in turning faceabout every three sea miles as the opposite sides of a straight line course were negotiated, these American craft lost not more than 25 crankshaft revolutions a minute; whereas in the Saunders-built Sunbeam-engined 1,800 h.p. "Maple Leaf V", entered by Sir Edward Mackay Edgar and driven by Harry Hawker, lost as many as 450 crankshaft revolutions a minute in these circumstances. The Liberty engines were adapted merely in the sense of removing the pump gear to the rear, and such like obvious changes.

### Fruits of Seven Years' Endeavours to Economise Power Waste

The adaptation of aircraft engines to hulls developed in a way that has been possible through the pursuit of the sport in America without interruption for seven years, enabled the American to win the race this year quite easily by travelling at 61.54 land miles an hour over a 33.084 sea mile course, against 55.70 land miles an hour achieved by Sir Edward Mackay Edgar's Austin-engined Saunders-built "Maple Leaf IV" when carrying the victory in 1913, which was the last race of the sort before the War. Of course, in America there have been the Gold Cup races, and so on,

in the interval. The fastest lap which "Miss America" made in this year's racing in Osborne Bay was 65.17 miles an hour. But she has done a short "burst" against the clock in American waters at 80 land miles an hour. Further, in the course of tuning-up trials Sir Edward Mackay Edgar's Sunbeam-engine Saunders-built "Maple Leaf V" travelled on three occasions at 67.61 land miles an hour. Again, in America a 22 ft. Canadian-built boat, "Miss Toronto," has travelled at 72½ land miles an hour. This vessel has one Liberty engine only. In like fashion, under handicap conditions as to power, length and weight, Mr. Louis Coatalen's "Sunbeam-Despujols II," of 26½ ft. length, otherwise 3 in. longer than the winning "Miss America," would have come out easily first, as witness the fact that Sir Algernon Lee-Guinness was only 4 mins. 56 secs. behind Mr. Garfield Wood's performance over the 33.08 sea miles. Officially timed over a measured mile in Monaco Bay this spring, "Sunbeam-Despujols III" did approximately 65 land miles an hour.

About the application of aircraft engines to skimming boats, of course there is no difficulty for the simple reason that we have learnt in seaplane construction, maintenance and use, how to protect this type of power plant against corrosive action and so forth. All the problems are not mastered completely, but they are controllable within practicable limits. The unsolved phases are being unravelled point by point. In the water craft that figured in this month's races in Osborne Bay there were failures due to the swamping of boats because of the inadequate protection of the engines set in forms of hulls which threw up such waves as to cause swamping in taking sharp turns. We have, however, learnt sufficient concerning the principles on which American design has been evolved during the seven years in which we have been engaged in war, and in turning over, to enable us probably to catch them up in hull design next year. The Americans consider we are ahead of them in power plant, as is but natural, for they have sparking plug trouble with aircraft engines, whereas we mastered that a couple of years or more ago. As we have learnt much about hull design from them, so they have learnt much about engines from us. They will not race with cold engines next year. Nor let it be imagined, as some have done because of the smooth motion of the American boats, that they are stepless. On the contrary, they have one step each.

### A Practical Suggestion

Meantime the great thing is to encourage British sportsmen to come forward and get boats built. The fault at present is that there are insufficient prospects of sport to attract large numbers of competitors. Thus we built six boats this year from which to select a team of three. So three of those vessels will practically never figure in any competition at all. Little, if anything, more will be heard of the remaining three that raced for the trophy. Incidentally, this means that the public is not being educated concerning the importance of these developments. The solution is obvious. When the dates of the qualifying Trials and of the Races for the Trophy in a given year are known, the Royal Motor Yacht Club should approach such corporations as those of Blackpool, Yarmouth, Margate, Brighton and other popular resorts, to get them to put up prizes for races between boats built for the British team for these races. Thereby their owners would enjoy sport after the "Bimb" races, and the British public would be both thrilled and educated concerning the importance of these notable developments. I have yet to meet the man or woman who, not having actually witnessed the spectacle, can form any conception of what it means for a boat to travel at over a mile a minute. Such corporations would very willingly find the money, because it would provide a new and sure attraction. The racing could be on all sorts of bases, not necessarily on Trophy rules. For example, one race might be organised for 26 ft. craft or less, whereas the Trophy rules allow up to 40 ft. Another might be on a power-weight handicap; another on a power-length handicap; another on a power-length-weight handicap. Thus every seaside resort could be offered an entirely exclusive type of race, and every owner would be only too glad to run his boat again and again to discover how it came out under the different heads, each of which would reshuffle the chances. Meantime, the work of education would go on rapidly without anybody realising it, because the knowledge would be absorbed by the multitude all in course of the day's fun.



## AIR MAIL SERVICES FROM LONDON

It is to be hoped that arrangements will be made to distribute as widely as possible the new leaflet, prepared by the Post Office, which sets forth particulars of the services now available from London.

All correspondence intended for the Air Mails should bear in the top left-hand corner a special pale blue—or is it grey-green?—label bearing the words "By Air Mail," a device which enables each packet to be easily selected during the process of sorting. These labels can be obtained free of charge at any Head Post Office, or on written application from the Secretary, General Post Office, E.C.1. In the absence of the label, the cover of the packet should be prominently marked, "By Air Mail" in the top left-hand corner; but the label should be used wherever possible to ensure the packet catching the next Air Mail. If express delivery in the country of destination is desired, the word "Express" should be prominently marked immediately below the words "By Air Mail" on the blue label.

Air Mail correspondence may be handed in for registration at any Post Office and, if registration is not required, may be posted in any public posting box. In addition, special arrangements have been made to accept Air Mail correspondence for the Paris, Brussels and Amsterdam services *over the counter*, at a later hour than would normally be possible, at the following offices in London, viz.: London Chief Office (King Edward Street, E.C.), Threadneedle Street and Lombard Street Branch Offices, E.C., Western Central District Office (New Oxford Street, W.C.), Western District Office (Wimpole Street, W.), South Western District Office (Victoria Street, S.W.), Charing Cross and Parliament Street Branch Offices. The latest times of posting at any place may be ascertained from the local Head Post Office.

All classes of correspondence, registered or unregistered (viz., letters, postcards, packets of printed papers and commercial papers and samples), except parcels and insured packets, may be sent by Air Mail, and the Air Fee, in addition to ordinary postage, is 2d. per oz. for Paris and Brussels and 3d. per oz. for Amsterdam. For express delivery, a further fee of 6d. is payable.

Correspondence for *Paris, Brussels, The Hague, Amsterdam and Rotterdam* is delivered on the day of despatch from London under the following conditions. In Paris letters are delivered (a) in the early afternoon if sent by the morning service, and (b) in the late evening if sent by the afternoon service and prepaid for express delivery. In Brussels delivery of both express and ordinary correspondence is normally effected in the evening. In The Hague, Amsterdam and Rotterdam, delivery by express only is effected the same day. In both Holland and Belgium correspondence sent by Air Mail is delivered throughout the country by first post next morning.

The Air Mail service affords acceleration to correspondence not only for places in France, Belgium and Holland, but also for countries beyond, such as *Switzerland, Italy, Spain, Portugal (via Paris) and Germany, Austria, Hungary, Sweden, Denmark, etc. (via Brussels)*. Such correspondence by securing connection with the Night Mails from Paris or Brussels may be accelerated by 24 hours.

Correspondence for *India, Egypt, Aden, East Africa, Ceylon, Straits Settlements, Hong Kong*, and in certain weeks *Australia*, if posted in time for the Air Mail from London to Paris on Friday morning will secure connection with the ordinary Mail despatched from London on the previous evening.

Correspondence for *Morocco*, up to a maximum weight of 7 oz. per packet, may be posted for conveyance by the Air Mail leaving Toulouse for Rabat on Tuesday and Saturday mornings. To secure connection, correspondence should be posted (a) in the provinces on Sundays and Thursdays in time for the Night Mails for London, and (b) in London on those days up till the latest night collection. The special air fee is 1s. for packets weighing up to  $\frac{1}{2}$  oz., 2s. for packets weighing more than  $\frac{1}{2}$  oz. but not more than  $3\frac{1}{2}$  oz., and 3s. for packets weighing more than  $3\frac{1}{2}$  oz. but not more than 7 oz. The general regulations given above apply to the Morocco service, but there is no Express Delivery service. Correspondence should bear the words "Par Avion de Toulouse à Rabat" boldly written in the top left-hand corner in addition to the blue label described in paragraph 2.

## REPORTS AND MEMORANDA

The following is a list of the Reports and Memoranda published during the month of July, 1920, for the Aeronautical Research Committee:—

### INTERNAL COMBUSTION ENGINE SUB-COMMITTEE REPORTS.

30. Effect of Capacity on the Peak Voltage of a Magneto (Supplementary Report); Tests on Rubber Cable. February, 1918. Price 2d.; post free  $2\frac{1}{2}$ d.

31. Rate of Rise of the Secondary Potential of an Ignition System. (With Diagrams.) September, 1918. Price 2d.; post free  $2\frac{1}{2}$ d.

34. Effect of Shunted Resistance, or Plug Leakage, on the Sparking Performance of an Ignition System. (With Diagrams.) December, 1918. Price 1s.; post free 1s.  $1\frac{1}{2}$ d.

35. Tests on an R.A.F. 230 h.p. Water-cooled Engine to determine the Effects (a) of a Change in Inlet Air Pressure, (b) of a Change in the Back Pressure, Positive and Negative. (With Diagrams.) February, 1918. Price, 4d.; post free 5d.

39. Tests on an R.A.F. 4D 12-Cylinder Vee Engine with Aluminium Cylinders, to determine the Effect (a) of a Variation in Inlet Air Temperatures, (b) of a Change in the Back Pressure, Positive and Negative. (With Diagrams.) July, 1918. Price 6d.; post free 7d.

40. Theory of the Magneto. (With Diagrams.) October, 1918. Price 1s. 6d.; post free 1s.  $7\frac{1}{2}$ d.

41. Résumé of Experimental Work on Air-cooled Cylinders at the Royal Aircraft Establishment. Part 2. (With Diagrams.) January, 1919. Price 1s. 3d.; post free 1s. 5d.

48. Sparking Potential of Sparking Plugs. (With Illustrations.) May, 1919. Price 6d.; post free 7d.

### REPORTS AND MEMORANDA.

422. Rolling and Pitching of a Handley Page Machine. Preliminary Tests on. (With Diagrams.) March, 1918. Price 3d.; post free  $3\frac{1}{2}$ d.

511. Relation between Atmospheric Humidity and the Tensile Strength of Doped Fabric. Preliminary note on the. July, 1917. Price 1d.; post free  $1\frac{1}{2}$ d.

525. Turn Indicators for Aeroplanes. (With Diagrams.) December, 1917. Price 3d.; post free  $3\frac{1}{2}$ d.

540. Efficiency of Reverse Rotating Propellers in Tandem. Investigation on the. (With Diagrams.) May, 1918. Price 4d.; post free 5d.

587. Model Experiments on the Possibility of producing a Wind Channel of Simple Construction where great Uniformity and Steadiness of Wind are not required. (With Diagrams.) February, 1919.

606. Pigmentation of Dopes. (With Diagrams.) July, 1918. Price 6d.; post free 7d.

617. Behaviour of Aeroplanes when flying inverted, with special reference to some Accidents on "A." (With Diagrams.) January, 1919. Price 1s. 9d.; post free 1s.  $10\frac{1}{2}$ d.

620. Multiplane Interference applied to Propeller Theory. Preliminary Investigation of. (With Diagrams.) July, 1918. Price 4d.; post free 5d.

631. Determination of the Skin Friction of a Flat Surface from the Changes in Head of the Fluid passing over it. (With Diagrams.) February, 1919. Price 4d.; post free  $4\frac{1}{2}$ d.

637. Economical Conditions for Long Flight. June, 1919. Price 2d.; post free  $2\frac{1}{2}$ d.

641. Maximum Control of Elevators of different Sizes. (With Diagrams.) June, 1919. Price 3d.; post free  $3\frac{1}{2}$ d.

Technical Report for 1916-17. (With Appendices.) Vol. I. Price 7s. 6d.; post free 8s. 6d.

### Flight to Alaska

THE four De H. machines belonging to the U.S. Army which left New York on July 15, arrived at the end of last week at Ketchikan, Alaska. Although the trip of 3,500 miles occupied twenty-nine days, subsequent flights with mails and passengers are expected to be much quicker. The flight would have been almost impossible without the co-operation

of Canada, which was given generously. Not only was permission given for foreign army planes to fly over Canadian territory, but landing-fields were provided, and every facility of the Dominion Weather Bureau was placed at the flyers' service. The aviators will proceed to Rome, and thence to Cape Prince of Wales, a point only fifty miles from the coast of Asia.



## THE AIR MINISTRY COMPETITION AT MARTLESHAM

### A Brief Log of the Progress Made

DURING the last days of last week the weather, which had prevented several of the tests from being carried out, showed great improvement, and no time was lost in taking advantage of the fact. The tests for which it is necessary to have calm weather, or at any rate winds of not more than 5 miles per hour, are mainly the landing and getting-off tests. These, it may be remembered, consist in alighting over obstacles representing a fence surrounding a field, coming to a standstill in as short a distance as possible after clearing the "fence." The machine then has to get out of the "field" again, clearing the "fence" by as many feet as possible. In the case of small machines the diameter of the circle in which the landing has to be made is 175 yards, and that for the large machines has a diameter of 275 yards. The obstacles over which the machines have to pass are to be 50 ft. high. In view of the nature of the aerodrome at Martlesham, these tests are none too easy, and it was generally expected before the trials that several machines would be damaged in making the attempts. This has already been proved to be so, although probably to a smaller extent than anticipated, showing that the machines entered are of sturdy construction.

In order to facilitate reference, and to give a review of how far the competition has progressed, we have compiled a brief log showing the tests passed by each individual machine entered, as it is thought that in this manner it will be easier to see at a glance what has been accomplished and what yet remains to be done.

#### SMALL MACHINES

The machines entered in this class are six in number, the following taking part in the competition: Austin "Kestrel," 200 h.p. Beardmore engine; Beardmore W.B.10, 200 h.p. Beardmore engine; Bristol Seely-"Puma," 240 h.p. Siddeley-"Puma" engine; Avro triplane, 240 h.p. Siddeley-"Puma" engine; Sopwith "Antelope," 180 h.p. Wolseley-Hispano "Viper" engine; and Westland Limousine 450 h.p. Napier "Lion" engine. In the following log the data given are those available at the time of going to press, and given good weather it is probable that by the time this issue of FLIGHT is distributed several of the machines may have passed the remaining tests.

#### The Austin "Kestrel"

This machine has now passed the following tests: Five minutes' uncontrolled flight, landing from 500 ft. with engine throttled down, high-speed 109.96 m.p.h., low-speed 45.1 m.p.h.

#### The Beardmore W.B.10

has not yet been finished and tested sufficiently to commence taking part in the competition.

#### The Bristol Seely-"Puma"

has completed its seven hours' reliability and economy flight. In the high-speed test it attained a speed of 108.3 m.p.h., and its low speed was 49.07 m.p.h.

#### The Avro Triplane

Capt. Hamersley was the first to pass the high-speed test, his average, as recorded in last week's issue, being 95.7 m.p.h. This machine has also completed its seven hours' reliability and economy test. In the getting-off and alighting trials the Avro landed in 239.1 yards and in getting off cleared the 50-ft. obstacles by 1.18 ft. Unfortunately in one of the four attempts permitted the undercarriage of the machine was damaged, and no further attempts at improving the figures already stated could be made.

#### The Sopwith "Antelope"

Piloted by Mr. Hawker the Sopwith machine has passed the following tests: Reliability and economy, five minutes' uncontrolled flight, high-speed 110.35 m.p.h., low-speed 43 m.p.h., glide from 500 ft., landing 187.7 yards, getting off 13.8 ft.

#### The Westland Limousine

Capt. Keep has successfully put this machine through the following tests: Seven hours' reliability and economy, five minutes' uncontrolled flight, glide from 500 ft. with engine throttled down, high-speed 117.7 m.p.h., low-speed 46.05 m.p.h.

#### LARGE MACHINES

Only three machines are entered in this class, these being: Central Aircraft Co., "Centaur 2A," two 160 h.p. Beardmore engines; Handley Page W.8, two 450 h.p. Napier "Lion" engines; and Vickers Vimy-Commercial, two 375 h.p. Rolls-Royce "Eagle" engines.

#### The "Centaur 2A"

has not, up to the time of writing, passed any of the tests.

#### The Handley Page W.8

Unfortunately a mishap prevented the Handley Page from completing her seven hours' reliability and economy test. It appears that after flying for about two hours in the first half of this test a tear in the fabric prevented completion of the test.

#### The Vickers Vimy-Commercial

So far this machine has done well in the large class. It has passed its seven hours' reliability and economy flight, high-speed 102.73 m.p.h., low-speed 49.63 m.p.h., landing 308 yards, getting off 26.45 ft. It will be seen that although over-shooting the stipulated 275 yards by 33 yards, the Vimy-Commercial in getting off cleared the 50-ft. obstacle by the handsome margin of over 26 ft.

## AIR MINISTRY ACCOUNTS

THE following criticisms of the Air Ministry appear in the third report of the Committee of Public Accounts:—

"We trust that the various assurances, statutory and otherwise, to the effect that persons joining the Air Force should not lose thereby, will be interpreted in a reasonable spirit and will not be extended beyond their original intention.

"The Comptroller and Auditor-General referred to certain cases in which the Administrator of Works and Buildings, without reference to the Treasury, authorised:—

"(a) The grant of Armistice Bonus to the workmen of contractors and sub-contractors.

"(b) The extension of the Committee of Production's Award No. 860 as to 12½ per cent. bonus to persons not covered by it.

"(c) The addition of nearly £500,000 to the cost of certain works—principally at Eastchurch and Manston.

"It seems to us clearly indefensible that he should not have made better arrangements to keep the Finance Branch of the Air Ministry (and through them, when necessary, the Treasury informed of his actions. For instance, his decision with regard to the 12½ per cent. bonus was given on 15th March, 1918, but the Finance Branch heard nothing of it till May 17, 1919. If independent action is taken in this manner it is impossible to co-ordinate administration, nor can the accounting officer exercise the control which Parliament expects of him.

"On the further question whether the Administrator of Works and Buildings was justified in taking action in the first instance without financial authority, the impression left on our minds is that, even taking into account the very exceptional circumstances of the time, he assumed an unnecessarily

independent position and made no real attempt to co-operate with his financial colleagues.

"Our attention was drawn to the unsatisfactory state of the Air Ministry's Store Accounts. We were informed that a Committee was already sitting to lay down an improved system, and we hope to learn next year that the work has been brought to completion, after such communication with the Treasury as may be necessary.

"Our attention was drawn to an order for 500 Liberty Engines (costing about £3,680,000) placed in America on November 8, 1918, by the Secretary of State for Air. We were informed that it would have been competent to him to give a similar order in the United Kingdom on his own authority, but that, as this transaction had bearings on the American exchange, it required the approval of the "American Board" of which the present Chancellor of Exchequer was Chairman, and that, in defiance of the definite instructions of that Board (who had cancelled an authority previously given), he settled the matter direct with the United States Secretary for War. The order was not transmitted through the British War Mission as was usual. The Treasury, when informed, declined to give covering authority.

"The Secretary of State's action was defended on the ground that, having in view the doubts which America might have as to the termination of the War (the Armistice being imminent), they would be all the more ready to part with their engines: but, unless the engines were actually required by this country, this argument is hardly convincing.

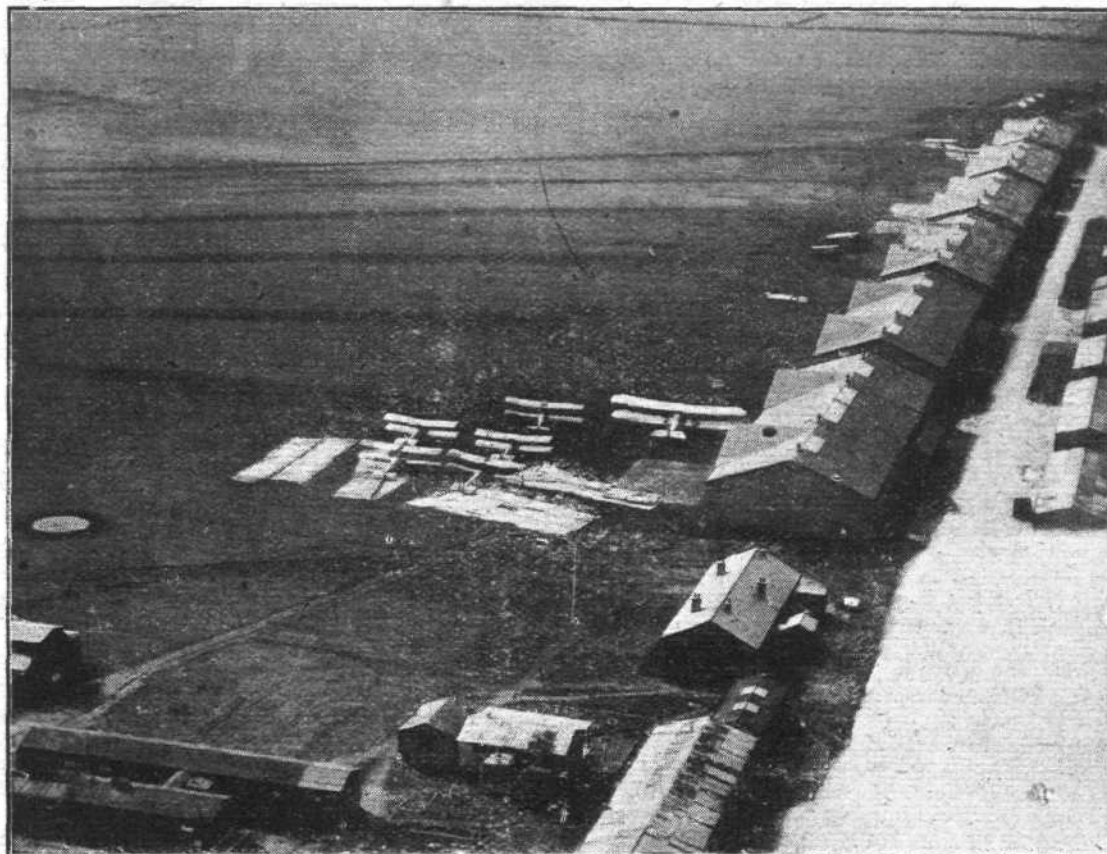
"On the whole, while the transaction was highly irregular, we do not recommend that further action should be taken with regard to it."



## A MODERN FLYING SCHOOL

ONE thing that plays a more important part in flying than in any other profession is the personal equation. This is especially true in the initial stages of the training, and it applies not only to the pupil, but in even greater degree to the instructor as well. Unlike what happens in many other

strations before a class produce unequal results, depending to a great extent upon the individual characteristics of those forming the class, some being "slow in the up-take," some being "heavy-handed," while others have, literally, "got hold of the wrong end of the stick."



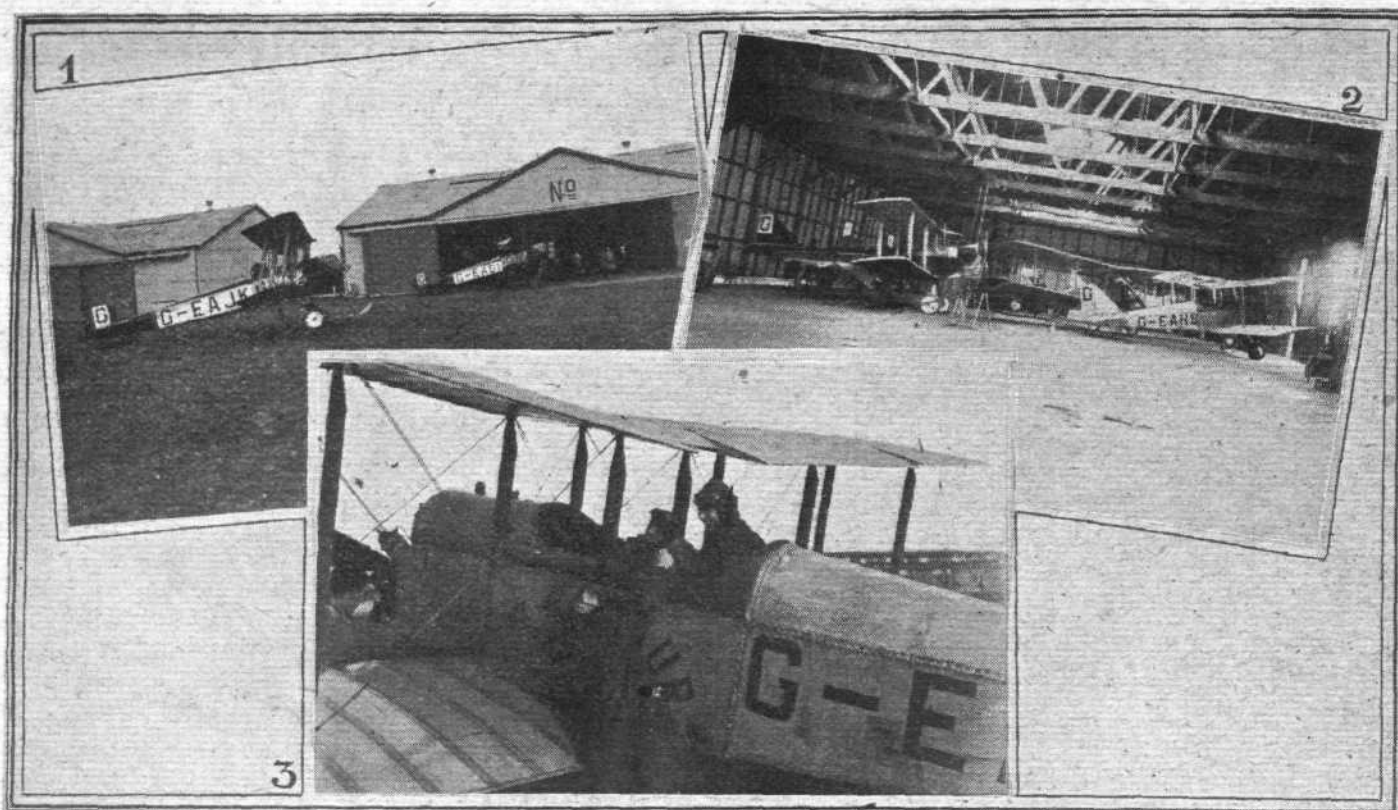
The Central Aircraft Co.'s Flying School at Northolt, as seen from above

callings, it is almost impossible to teach with any considerable degree of success the art of flying collectively. In other words, when there are a large number of pupils, the personal element comes into play to such an extent—on the practical side of the training at all events—that lectures and demon-

All this, while more or less common to other courses of instruction, and practically unavoidable, becomes an extremely serious matter when it occurs in connection with flying, for if the pupil does not grasp his subject thoroughly from the very outset, grounding his knowledge upon sound

Some of the staff of the Central Aircraft Flying School





THE CENTRAL AIRCRAFT CO.'S FLYING SCHOOL AT NORTHOLT: (1) Two of the School's Avros; (2) Some C.A.C.-built school-'buses; (3) A lady pupil off for a flip

principles, he will not only find difficulty in making satisfactory progress as a pilot, but he will run the very grave risk of meeting with disaster sooner or later.

In practice, therefore, it comes to this, that if the best is to be made of each pupil, he must receive individual tuition right through his course of training. From this it will be apparent why the personal equation on the part of the instructor plays such a very important part. A man may be an excellent pilot, and have the theory and practice of aeronautics at his finger-tips, but yet he may be unable to impart this knowledge to others. An efficient instructor must be in full sympathy with each one of his pupils, and be able at all times instantly to recognise and differentiate their temperaments.

These very important considerations appear to have been fully appreciated by the Central Aircraft Company in forming their school of aviation. In the first place, it should be noted that it is not merely a school of flying—the only purpose of which is to rush the pupils through for their tickets in the quickest possible time—but it is one in which the pupil is taught something more than just how to take a machine into the air and bring it down again.

It is the object of the school to make every pupil who passes through the establishment a fully qualified aviator, who will know not only how to fly—and fly well—but who will have acquired also a knowledge of how an aeroplane is made, experience of how it works, and why, and who will have the ability to maintain the machine in proper flying trim so that it may continue to perform useful and efficient service. It is hardly necessary for us to go fully into the details of how the "C.A.C." go about achieving these things, but we may say that when the system was outlined to us recently by Mr. Cattle, it impressed us very favourably. Lectures on the various branches of aviation are given by competent instruc-

tors, and Mr. J. S. Fletcher, designer to the firm, looks after both the theoretical and constructional sides. Pupils at the school have the great advantage that they are at all times able to visit the works at Kilburn where the various C.A.C. machines are manufactured, and are thus able to follow the life-history of an aeroplane, from the drawing-board to the time when it is ready to take the air.

As far as the actual flying is concerned, the school is particularly fortunate in its aerodrome and the machines which fly there. The former is, in fact, none other than the Northolt Aerodrome, formerly used by the R.A.F. as a training ground, and one of the best in the country. It comprises some 350 acres of flat, well-drained land, free from trees, hills, and other disturbing elements, and the establishment includes the necessary hangars, workshops, restaurant and sleeping quarters. Its situation is within a few minutes' walk of Northolt Junction Station, which is served by an excellent service of trains from both Paddington (Great Western) and Marylebone (Great Central) Stations, while Ruislip, on the Metropolitan Railway, is within a short walk of the grounds. As regards the machines, these have been designed and built at the C.A.C. works specially for the purpose of the school. It is a light but strongly-built two-seater tractor biplane, fitted with either an 80 h.p. Renault or a 100 h.p. Anzani motor. One of the leading factors of the construction is the interchangeability of parts. All interplane struts, for instance, are identical, both front and rear. The upper and lower planes are also alike, and can be used in either position, whilst the elevators and rudders are likewise interchangeable.

We understand that the machine is a particularly easy one to fly, and possesses a marked degree of inherent stability. The maximum speed is 75 m.p.h., while the landing speed is as low as 32 m.p.h.

## AVIATION IN PARLIAMENT

### Air Department

MR. HOGGE, in the House of Commons on August 10, asked the Secretary of State for Air whether disabled officers are being resigned from his Department while men with no real War service, with considerable private incomes, have been appointed to sectional directorships?

MR. CHURCHILL: I am informed that only one disabled officer is under notice of discharge, and every endeavour is being made to find him further employment, suited to his experience. I may add that no ex-service man, whether disabled or not, is discharged from the Air Ministry until his case has been considered by the Air Ministry Ex-Service Men's Employment Committee, on which a representative of the ex-service men sits. The suggestion that the claims of disabled officers are not given every possible consideration is quite unwarranted.

MR. HOGGE: Is it not a fact that the recent appointments to the sectional directorships are held by men as stated in this question? Is the right hon. gentleman aware that there are a great many more than one disabled officer who have served throughout the War now being resigned from his Department?

MR. CHURCHILL: I have made enquiries, and I do not think that the facts at all bear out that view.

### Aeroplanes, Air Stations and Personnel

MR. PURCHASE, on August 11, asked the Secretary of State for Air the number of aeroplanes that are now being utilised; the number of air stations in England and Wales; and the staffs employed there?

MR. CHURCHILL: The total number of machines being utilised is 5,174. This number makes provision for initial equipment, reserve and wastage. There are 45 air stations, including depôts and seaplane stations, in England and Wales, and the personnel employed total 1,389 officers and 16,750 other ranks.

### Sinn Feiners (Aeroplanes)

CAPT. FOXCROFT asked the Secretary of State for War whether aeroplanes manned by Sinn Feiners, wearing British uniforms, recently visited certain British camps in the west of Ireland; and whether there is any reason to believe that these aeroplanes were Government property during the War?

MR. CHURCHILL: I am informed that nothing whatever is known of this matter, and I think it may safely be assumed that the whole story is a fabrication.



# CIVIL AVIATION—OCTOBER, 1919, TO MARCH, 1920

(Concluded from page 894)

**Holland**—Responsibility for civil aviation rests at present with the Minister for Waterways and Roads. A Dutch Air Attaché has been appointed to Paris. As a means of awakening public interest in aviation in Holland and her Colonies, the Government has organised a long-distance flight from Holland to Java. It is defraying the expenses of the competitors, and subscribing 10,000 florins (£900) towards the prize.

The advantageous position of Holland as a junction for aircraft bound to Scandinavian countries is recognised and subscriptions are being raised at several important industrial towns for the establishment of local civil aerodromes. It is also believed that the Government has given, or contemplates giving, a grant to the municipal authorities of Amsterdam and Rotterdam for the construction of international aerodromes. The whole matter of opening up aerodromes for civil aviation in Holland is under consideration by the four Ministries (Navy, War, Waterways, and Finance), but no definite decision has been reached. It is expected that Schiphol will soon be used as a starting point and landing ground for commercial machines.

A company, known as the Royal Air Transport Company for the Netherlands and Colonies, has been founded with the support of important commercial interests. This is a private company which has been granted the title of Royal by the Queen.

The Netherlands East Indian Government has decided, for purposes of meteorological, climatic, and other observations, to execute a daily flight between Batavia and Surabaya. This will be carried out during four, not necessarily consecutive, months of the year, and seaplanes and aeroplanes will be employed alternatively.

**Hungary**—A Department for the administration of civil aviation has been formed under the Minister of Commerce, who is employing demobilised officers to assist in this work. This Department is drafting regulations governing air navigation. It is reported that an aerial transport company, known as the "Ungarische Aero-Verkehrs Aktiengesellschaft," has been formed, with a capital of 50,000,000 kr. (£67,000), for the purpose of establishing aircraft services. As in the case of Austria, the present industrial and economic state of the country is unfavourable to the development of civil aviation.

**Italy**—The General Directorate of Aviation under the Minister of Transport, constituted by a Royal Decree of June 30, 1919, is still responsible for the administration of civil aviation, and controls the Technical, Supply and Experimental Departments of military aviation and training schools. It is, however, reported that the appointment of an Under-Secretary of State for Air is contemplated. A Royal Decree for the regulation of air navigation came into force on January 3, 1920.

The Government is sparing no pains to promote Italian interests abroad, and it is understood that 16 Air Attachés have been appointed to various countries. In addition to the countries enumerated in the last report, missions have been dispatched to Japan, Peru, Poland, Serbia, Czechoslovakia, Finland, Indo-China, and Turkey. As an example of the expenditure incurred by these missions, it is interesting to learn that the initial cost of the mission to Argentina was 6,000,000 lire (£66,000), in addition to 350,000 lire (£3,900) a month for running expenses.

Italy has also realised the importance of securing a market in the East, and for this purpose a demonstration flight is now being undertaken from Rome to Tokio. In connection with this flight a number of machines have been sent to China and are being exhibited at Shanghai.

The following internal air routes are projected or in course of organisation by the State, which will bear the cost of their maintenance until the development of civil enterprise permits of their being conceded to private companies:—

- (1) Northern Italy. Turin-Trieste, with branches northwards to Bressanone and southwards to Bologna.
- (2) Western Italy. Nice-Sicily via Genoa, Pisa, Rome and Naples, with a branch line from Rome to Sardinia.
- (3) Eastern Italy. Bologna-Brindisi-Otranto.
- (4) Connecting routes. Rome-Ancona, Naples-Foggia, Milan-Genoa, etc.

A number of former service aerodromes have already been opened for civil aviation. A passenger and postal air service between Italy and Greece is being operated as an experiment by the Italian Government. A flight is made in both directions twice a week. Air postal flights have also been carried out by the Italians between Athens and Candia (Crete).

With a view to advertising Italian machines a demonstration flight employing six F.B.A. seaplanes is expected shortly to leave Naples for Sweden. The route to be followed is:—Naples-Leghorn-St. Raphael-Geneva-Bâle-Cologne-Amsterdam-Esbjerg-Stockholm. The development of air communication in the Italian Colonies is also receiving attention. A service between Italian Eritrea and Somaliland is being organised, while the possible use of air transport in Tripoli and the Libyan Provinces is under consideration.

A feature of State aid is the proposed institution of civil aviation schools and University courses at Rome and Turin. As an indication of the methods by which the Italian Government proposes to assist private enterprise, it may be mentioned that a Sardinian company is reported to have obtained a concession for running a service between Rome and Sardinia which includes a subsidy of 660,000 lire (£7,300) and the free use of aviation material in Sardinia to the value of 15,000,000 lire (£166,700).

A new semi-rigid airship, "T.34," is now undergoing trials.

**Spain**—Since the last report there is evidence that keener interest is being taken in civil aviation. A Royal Decree was signed on November 25, 1919, determining the conditions under which aircraft may fly over and land on Spanish national territory, with an annex for the general regulation of civil air navigation. A further annex, dated December 13, 1919, contains regulations for Spanish air customs. Later in December, by a Decree of the Minister of Public Works, a Department for Aerostatics and Civil Aviation was established under the Directorate of Commerce.

A Committee, constituted earlier in the year under the President of the Ministerial Council for the consideration of aviation matters, will now form a consultative body for the new Department of Aviation. The Ministry of Finance, under Royal Order, has fixed the rates to be paid for correspondence sent by air mail. Until special stamps are brought into use mail matter will be franked with the ordinary stamps surcharged according to the rate for the aerial post. All ordinary letters and money orders can be sent by aerial post up to a weight limit of 500 grammes. Registered and insured letters and parcels are not carried and the Post Office accepts no responsibility for loss or damage. The technical inspection of air postal services will be conducted according to the regulations fixed for civil aviation, and an inspector for this duty will be appointed by the Director-General of Posts and Telegraphs.

Private local enterprise is still in the preparatory stage, the principal activity being displayed by the French. The Toulouse-Rabat line, which passes over Spain, now appears to be organised on a firm basis, and the contract for the operation of an air mail service between Madrid and Barcelona foreshadowed in the last report is stated to have been obtained by a French firm. The air mail service between Barcelona and the Balearic Isles has been organised by an association of Mediterranean shipbuilders. It was inaugurated on March 18, 1920, and a preliminary flight has already been made. Italian seaplanes are to be used. A postal service between Barcelona, Alicante and Malaga has been authorised by the Director-General of Posts and Telegraphs, and inaugurated by the French Latecoere Company. (*Vide also under France.*) It is reported that a new aerial service for passengers and mails is to be opened between Bilbao, Biarritz and Bayonne. A French firm is interested in this project, and both the Spanish and French parties are to be equal in number. (*Vide also under France.*)

**Switzerland**—Steps have been taken to dissociate the control of military and civil aviation, by transferring the latter from the Minister of War to the Minister of Posts and Railways, under whose administration a Bureau of Civil Air Navigation was opened on April 1. This step has been hastened by the opening of air traffic with England and France as a result of the temporary agreements with those countries, which came into force on March 1. In the first instance, the Bureau will be provided with a small staff only and its duties will apparently be of a limited and tentative nature. A small sum has been placed at its disposal. Among its functions will probably be the supervision of examinations for pilots carried out by the Swiss-Aero Club, and the encouragement of research. On January 27, 1920, the Government published Air Navigation Regulations governing flight over Swiss territory. Appointed customs aerodromes have been opened for international flying at La Blecherette (Lausanne) and Dubendorf (near Zurich).

A number of Swiss companies are devoting themselves



to giving passenger flights over the Swiss lakes and over Alpine scenery, and are interesting themselves in the establishment of regular air services. The Swiss "National Aviatik" Company of Dubendorf has taken over from the Government the air service which formerly carried mails between Dubendorf, Berne, Lausanne and Geneva. Three other routes have been studied by this company, viz.:—Lausanne-Yverdon-Neuchâtel Lake-Aar Valley-Bâle. Zurich-St. Moritz, via Grisons Canton. Zurich-Lugano, via Locarno. The Ad Astra Schweizerische Luftverkehrsgesellschaft (Swiss Air Traffic Co.), Zurich, has carried out a large number of passenger flights at Locarno and Zurich. It is reported that the company contemplates next year the operation of an aerial service between Geneva and Friedrichshafen to connect the French line Marseilles-Geneva with the German airship line Friedrichshafen-Berlin-Stockholm. The "Société Aero," Zurich (Comte, Mittelholzer and Co.), has, according to a report, now amalgamated with the "Ad Astra" company. Formerly it undertook passenger flights and the manufacture of photographs and films taken above the Alps. The Avion Tourisme S.A. (Aeroplane Touring Co., Ltd.), Geneva, has hydro-aeroplane bases at Lugano and Locarno, from which passenger trips are made round the lakes.

#### ASIA.

**China**—Foreign countries are continuing their endeavours to open up Chinese markets for their products, and in view of the predominant position which the French hold in the Chinese Postal Administration, it is not unlikely that they will make a strong bid for the privilege of inaugurating an air postal service. Italy is also making an effort to secure a footing, and a report was received towards the end of January, 1920, that a shipment of Italian aeroplanes had arrived at Shanghai, where the machines were on view. (*Vide also under "Italy."*) The Anglo-American Tobacco Company is reported to have decided to use aeroplanes to carry their men and medical supplies into the interior. An American company is reported to have shipped in January seaplanes to Hong Kong for operating commercially on the coast of China and adjacent waters.

**Japan**—During the last six months aviation has made little progress. There are signs, however, that the necessity for an efficient air service is recognised. A special committee has been appointed to deal with civil aviation, and it is expected that as a result of its deliberations, a permanent Aviation Board composed of eight representatives from the Army, four from the Navy and fourteen from the Civil Service will be established. The President of the Japanese Imperial Aviation Association, Gen. Nagaoka, who is touring through Europe and America, arrived in England towards the end of March, in order to make a thorough investigation of civil aviation in this country. Two companies have been formed with the object of inaugurating air services.

**Siam**—A Royal Decree was published on February 9, 1920, stating that the King ratified, on February 2, the Air Convention of which Siam is a Signatory State. A further Decree of the same date entrusts the Minister of War with the entire direction of all matters concerning air navigation.

In this country the French appear to have established a dominating position in aviation matters. According to a report of January, 1920, an air postal service was about to be established between Bangkok and Uboh by the Siamese Flying Corps. An Italian Mission arrived in Siam in October of last year.

#### AMERICA

**Cuba**—It is reported that the Cuban Government intends to devote 15,000,000 dollars (£3,950,000) to the purchase of aircraft. Representatives of the French Farman firm are arranging for services between Cuba and the United States and French pilots are already in the country.

**South American States**—Considerable interest in aviation is displayed by all these States. France, Italy, the United States and Great Britain are entering into keen competition to establish markets for their aircraft products.

(i) **Argentina**—A decree, authorising the formation of an Aviation Division in the Department of the Ministry of Marine, was signed on October 17, 1919, and 250,000 pesos are earmarked in the 1920 Budget for the purchase of war material. There exist at present three Air Transport Companies:—(a) The Compania Franco Argentina des Transportes Aereos, among the objects of which is to represent the French aviation industry in Argentina; (b) the Compania Argentina des Transportes Aereos, which is closely associated with the firm of Saenz Mai and Co. (these two companies owe their origin largely to the acquisition of the surplus stock of the French and Italian Missions that arrived in October and March 1919, respectively); (c) the Sociedad Rio Platense de

Aviacion. A new mission from Italy (the second) arrived at Buenos Aires on March 29. This mission was sent by the Italian Ansaldo Company, and is composed of a number of pilots and mechanics, to be followed by some machines. The United States are represented by the Curtiss Aeroplane and Motor Corporation. It is reported that this company is engaged in teaching Argentine officers and civilians at Palomar, and it is believed that the Ministry of Marine has purchased a few Curtiss machines.

(ii) **Brazil**—The French have obtained valuable contracts, partly as a result of the efforts of their mission which was established in the country so far back as October, 1918, one of which is to equip and train the Brazilian Air Service. The Italians have also sent a mission to Brazil, but beyond carrying out propaganda, it does not at present appear to have achieved any definite results. It is understood that 9 Curtiss aeroplanes have been ordered from the United States. A prize of £10,000 has been offered for the first successful flight between Lisbon and Rio, and it is believed that the Ministry of Marine has been authorised to spend £10,000 to provide assistance.

(iii) **Chile**—Several British aircraft firms are endeavouring to obtain concessions to institute commercial air services. A late R.A.F. officer was given charge, in November, 1918, of instruction at the military aviation camp. Owing to the success achieved by him this contract was renewed for another year. A gift of aeroplanes by the British Government was highly appreciated.

(iv) **Colombia**—Colombia offers exceptional opportunities for the employment of aerial transport, as throughout the greater part of the country the only other means of communication are the river Magdalena and a limited mule service. On April 11, 1919, a resolution, signed by the Minister of the Interior, was adopted, calling for public tenders for the transport of mails by air. The French have already obtained connections in this country, and in accordance with a contract entered into with the local Compania Colombiana de Navegacion Aerea (capital, £160,000) have undertaken to send out an expert staff of pilots and mechanics to build suitable aerodromes and establish services between various towns. Another company is reported to have been formed with French capital, to establish a hydroplane service on the river Magdalena.

(v) **Ecuador**—Italy has sent a mission to Ecuador and appears to be the first country to have obtained a footing. In addition to the Italian effort, the Americans are reported to have offered to supply the Army of Ecuador with aeroplanes. In December information was received that the Government of Ecuador was desirous of obtaining particulars of British aeroplanes for military use.

(vi) **Peru**—This country is very mountainous and offers very few places in which aeroplanes can land with safety. seaplanes could be used to advantage, as the coast is practically free from storms during the whole year. In August information was received that the Peruvian Postmaster had been authorised to ask for tenders from several European and American firms for the establishment of an air route between Tarma and Iquitos for the transportation of mail, passengers and freight. Several British firms have made proposals to the Peruvian Government. It is believed that the French Military Mission which arrived in September has been successful in arranging with the Government that it should be consulted on all questions of aviation. The American Curtiss Company has three machines in the country, and it is believed to be also endeavouring to secure the contract for aerial services.

**United States**—The creation of an Air Department has not yet materialised. Senator New's Bill to effect this was discussed by Congress, but after meeting with considerable opposition, based on the expenditure involved, it was returned to the House Committee on Military Affairs for review and amendment. There is, however, growing recognition of the importance and great possibilities of civil aviation throughout the country, and in view of favourable factors such as long distances, an equable climate and financial prosperity, it is probable that civil aviation in the United States will quickly develop as soon as public confidence has been secured. A number of States and cities have brought forward independent measures for the regulation of civil air navigation. In this respect it appears that a lack of co-ordination of legislation may result as is the case with the United States motor laws. In the absence of Federal legislation, the United States Air Service has formulated rules of the air as a guide to pilots. A Bill was introduced on February 26 in the State Assembly of New York, to regulate the use of aircraft, and after the first reading the Bill was referred to the Committee of the Judiciary.

Official effort is principally confined to the operation of



mail services from New York to Washington and Chicago, for which the Post Office claims a considerable measure of success, and to the forest patrols alluded to in the last report. A number of air transport companies, such as the North American Aerial Transportation Company, are being formed and aircraft exhibitions have been held. The only noteworthy achievement overseas has been the inauguration in-

the Philippines of a daily mail service between Manila, Fort Mills and Santa Cruz. An Aerial "Derby" round the world is now in course of organisation, and a special mission, composed of Commandant Beaumont and other prominent men, is touring the different countries for the purpose of making preliminary plans. The mission has already visited Japan, China, Dutch East Indies, and French Indo-China.



### Married

HAMILTON BLOFELD, M.C., late R.A.F., second surviving son of Mr. and Mrs. H. Blofeld, "The Woodlands," Sydenham Hill, was married on August 12 at St. Martin's, East Woodhay, to GRACE SYBIL, only daughter of Mr. FRANK SWEETLAND, of "The Grove," East Woodhay.

### To be Married

A marriage has been arranged, and will shortly take place, between Captain J. M. GLEN, M.C., R.A.F., and Miss GRACE CAUNTER, elder daughter of Brigadier-General J. E. Caunter, C.B., C.B.E., and Mrs. Caunter, of Trevoria, Torquay.

A marriage has been arranged, and will take place shortly at Bombay, between Capt. H. R. CLARKE, A.F.C. (late R.A.F.), youngest son of the late H. R. Clarke and Mrs. Clarke, of Cotham, Bristol, and SYBIL, youngest daughter of the Hon. R. and Mrs. TOLLEMACHE, of Hove, Sussex.



### Nursing Service Badges

New patterns of uniform and hat badges for the R.A.F. Nursing Service have been approved as under:—

*For Wear with Outdoor Uniform.*—Winged Caduceus of Mercury badge, surmounted by a crown, made in "all gilt," to be worn (a) on the lapel of the Norfolk coat, the bottom edge of the badge to be 1 in. above the inner end of the step opening on the collar of the coat, and the staff of the badge to be parallel to the inside edge, and midway between the inside and outside edge of the collar; (b) on the shoulder cape, the staff of the badge to be placed diagonally on the front corners of the cape, midway between the point of the cape and the turn of the band.

*For Wear with Mess Dress.*—Winged Caduceus of Mercury badge, as for wear with outdoor uniform, but with silver wings worn as at (b) above.

The above patterns of badges will be adopted as from September 1, 1920, and in the meantime badges of the old pattern should not be made. The new pattern badges can be seen on application to E.4.C., Air Ministry, W.C. 2.

The R.A.F.N.S. metal badges and black mohair bow in front of the hat have been abolished, and, instead, the members of the R.A.F.N.S. will wear the same hat badges as officers of the R.A.F. with a plain black mohair band.

### The Prince's Mail by Air

THE Australian Postmaster-General and the Minister of Defence co-operated in arrangements for aeroplanes to take the delivery of incoming English mails for the Prince of Wales at Port Augusta, the eastern terminal of the trans-continental railway, and convey them direct to Sydney. This was done to render the mails available for the Royal party on the day that the "Renown" left.

### Back from the Sea

A RELIC of the War was landed at Lowestoft on Monday by the steam trawler "Encore" in the shape of a Rolls-Royce engine and propeller, which it had trawled up near Cromer Knoll. They evidently formed part of a British aeroplane, and from their appearance it is thought that they had been in the water about three years.

### The "L 72" Over Paris

IN the course of her voyage from Maubeuge to the French naval air station at Cuers-Pierrefeu, near Toulon, on the 10th inst., Parisians had a fine view of the "L 72," the Zeppelin

The engagement is announced of HAROLD GARDINER HILL, M.B., M.R.C.P., late Major R.A.F., M.S., eldest son of Hugh Gardiner Hill, of Pentillie, Leopold Road, Wimbledon, and NANCY ELIZABETH JACKSON, younger daughter of Mr. and Mrs. Tom Jackson, of Waterfoot, Heaton, Bolton.

The engagement is announced of Capt. A. E. LINDON, R.A.F., eldest son of Mr. and Mrs. A. E. Lindon, of 26, Wray Crescent, N., and ROVENA MAY, youngest daughter of the late WILLIAM BROWN, of Blenheim House, Bullingdon Road, Oxford.

### Items

Dr. H. S. HELE-SHAW, Harrison Professor of Engineering in University College, Liverpool, 1886-1903, and in the university from 1903-4, has been elected Emeritus Professor of Engineering in the University of Liverpool.

Capt. (retired) MURRAY F. SUETER has been promoted to Rear-Admiral (retired).

surrendered by Germany to France. The airship rose at Maubeuge at 5.35 a.m. and four hours later was over Paris. Lyons was reached in another five and a half hours, the stage to Marseilles took two and a half hours, and at 6.15 p.m. the vessel cruised over Toulon. A quarter of an hour later the airship was above Cuers, but owing to the strong wind it was decided to stay aloft all night and land in the morning. Naval Lieut. Plessis was in command, and the crew included four other officers, ten petty officers, eight mechanics, and three passengers invited by the Minister of Marine.

### The R.E.P. Litigation

JUDGMENT was given in the Paris Courts on Aug. 14 in four appeals by French constructors against the garnishee obtained by M. Esnault-Pelterie on sums owing to them by the French Government. The Judge decided that M. Esnault-Pelterie must, to a certain extent, be regarded as a creditor of the firms in question, in view of the decisions, regarding his patents covering the "joy-stick," already given by the Courts, but that the amounts which he was entitled to garnishee, from the sums owing by the State, must be reduced to more reasonable figures in view of the evidence produced. In the case of M. Gabriel Borel, the Judge ordered that the amount held in suspense under the garnishee order should be reduced from 138,000 francs to 55,000; in the case of MM. Farman Frères, from 1,250,000 to 400,000; in that of the Morane-Saulnier company from 5,000,000 francs to 2,000,000; and of Caudron Frères from 8,000,000 to 3,200,000 francs. In the Breguet case the judge on August 10 ordered that the amount earmarked should be reduced from 16,000,000 to 4,000,000 francs.

### The Disappearance of Mdlle. Bolland

TWICE Mdlle. Bolland has caused some anxiety by her exploits. On August 11 she set out from St. Ingelvert for Croydon, but landed at Le Crotoy, and apparently did not report for two days. Starting from Brussels on Sunday last she was again reported missing, and on Monday afternoon she landed at Issy, but no details are to hand as to what happened.

### Germans and Chile

It is stated that a German civil mission is going to Chile shortly, with a view to entering into negotiations regarding the establishment of a commercial aviation service between Valparaiso and Santiago.

# AIRISMS FROM THE FOUR WINDS.

So after all that story told about aeroplanes galore in the hands of the Sinn Feiners is a myth. The Secretary for Air has officially stated that nothing is known of the matter, and that it is safe to assume that the whole story is a fabrication.

SINCE which apparently the "bhoys" have made a sporting bid to get hold of one of the R.A.F. machines which had temporarily got "winged" in the distressful country. As this armed intervention to annex the property of H.M. King George resulted in a wash-out, there would not appear to be even this loop-hole left to justify the "authoritative" origin of the story.

It is significant, as a start, that certain London city agents who have been accustomed to sending long telegrams to the Continent giving details of cargoes being shipped from London are finding it more economical—and probably quite as expeditious—to use the aerial mail service. Not only are these agents saving a matter of nearly 75 per cent. per annum in cost, but they frequently obtain replies to important communications on the same day, without being compelled to go to the cost of telegrams.

MOREOVER, it is very encouraging to note the more favourable leaning of the Postmaster-General to the Aerial post.



"Flight" Copyright

The marriage of Lord Montagu of Beaulieu and Miss Pearl Crake on August 10: The bride and bridegroom leaving St. Margaret's, Westminster, after the ceremony

This week he has issued quite an informative leaflet dealing with the increasing facilities available for sending letters by Aerial post. In fact it looks as if at last there may be a chance for the public to learn a few of the enormous, not to say phenomenal, advantages in speed and other respects which must accrue to communications sent by this medium. A distinct step in the right direction is the issue of that little

Blue Label **BY AIR MAIL** for distinguishing at P25

a glance the letters intended for despatch by Air. It is, in the absence of a real and distinctive British Aerial-post stamp, almost worthy of being included in every philatelist's collection, as we should not be surprised to hear it has been.

ALL the same, when are we to have that British Aerial-post stamp?

SOMEBODY must be in a terrible hurry to renew their taste of grouse for it to be necessary to send birds from the moors on the twelfth by aeroplane. These same must be real gourmets, as they evidently like their game fresh—or from last year's cold storage!

KING GEORGE, be it noted, was content to have his first brace sent along from Balmoral Moors to Buckingham Palace by the more prosaic iron road.

"WHAT will Sheffield City Council do with Coal Aston aerodrome?" is a question asked by the *Sheffield Telegraph* when handling the present position of this site.

"Sheffield was placed," our contemporary continues, "on one of the great trunk routes of the Civil Aviation scheme; there was talk of services to London, Birmingham, Manchester, and other places. But all this has apparently come to nothing. Aerial travelling is expensive, and until the cost can be reduced it is not likely to be popular in places like Sheffield. The Corporation, however, saw the advantage of buying the site of the Coal Aston aerodrome, and Parliament has given them the power to purchase."

"There seems very little prospect at present of aviation services, and the question arises: What will the Corporation do with the land? The suggestion has been made that part of the site shall be utilised for building purposes—to meet the present urgent need for houses—and it is not at all unlikely that this proposal will be adjusted. The Development Committee will, however, have to consider the matter, and their decision will be awaited with interest."

Should the houses get the Ayes, it would seem but a sorry outlook for the aerodrome scheme in the near or distant future.

AFTER all, the suggestion that a second edition, to take place in September, of the Aerial Derby should be organised has now been shelved, at least for this year. Perhaps the idea may be more successfully broached in 1921.

A SIDELIGHT on the aircraft work of the Ministry of Munitions is contained in the third report of the Committee of Public Accounts in a table showing the output of the principal supplies of munitions from July 1, 1915, to December 31, 1918. During this period there were produced 53,887 aeroplanes, 56,906 aero engines, 754 seaplanes and ship's aeroplanes, and 2,448 flying boats, and last, but not least, 4,737,668 aerial bombs.

In a statement of expenditure of the M.O.M. for the year 1918-19, one item is "Aeronautical supplies, £111,262,373 5s. 11d." Prodigious!

APPARENTLY an attempt to overcome another "impossible" is seriously contemplated, in the conquest of Mount Everest. A matter of 29,002 ft.—don't miss the two—this earth's



pimple has hitherto defied all mountain climbers, and having regard to the many natural obstacles attached to the adventure we are not over sanguine that aeroplanes will be able in this case to get over the difficulty. Possibly a dirigible might stand a better chance, but that is a bigger job altogether.

This great adventure is under investigation by a committee of members of the Royal Geographical Society and the Alpine Club. Sir Francis Younghusband, President of the Royal Geographical Society, Col. Bruce, Sir Martin Conway, Past President of the Alpine Club, are among those interested.

This is the first time a really organised official expedition has been undertaken. The personnel is not yet decided, and the date of departure is as much in the air as Everest's crown.

At the moment, according to report, Dr. A. M. Kellas is on the spot studying the position from the breathing point of view.

It is not only the height of this great giant, and the consequent thin air which protects its summit from idle curiosity, but even the natives thereabouts are opposed to climbers taking on the task. So far, it is claimed, no man has got within 10,000 ft. of the top and now the only remaining hope is *via* the air. In this connection a great climber who has recently returned from an expedition in

the Himalayas, in setting forth his views, states that aeroplanes have gone to greater heights without violent distress to pilot or passengers; but these voyagers have been merely sitting still.

"The difficulty in the high Himalayas," he states, "lies not so much in the nature of the actual rock and snow climbing. That is on the whole much easier than in Switzerland. It is the rarefied atmosphere that is the great obstacle. Mummery, a famous Alpine climber, established a depot close to the top of Monga Parbat, and stayed there for some time accumulating stores and acclimatising his lungs and heart to the thin air. The final ascent seemed easy; but on his dash to the peak he died."

"It is physical movement that becomes so extraordinarily exhausting. Over seventeen or eighteen hundred feet it is necessary to rest every hundred yards, sometimes every fifty yards. There are cases of climbers physically unable to manage the last three or four hundred feet of apparently easy going to a Himalayan peak, and forced to retire defeated."

Therein lies the hope of the air-way. But even should Everest succumb to this method of exploration, it is not very comforting to think that it is not yet certain that it will prove to be the highest mountain in the world. From most points of view it does not stand out very conspicuously, and there are numerous other peaks in that little-known wilderness of giants that may exceed it in altitude.

### An American G.B. Racer

ONE of the American representatives in the forthcoming contest for the Gordon Bennett Trophy in France will be the "Texas Wildcat," a specially designed Curtiss monoplane, with monocoque body, racing wings, and a Curtiss C-12, V type, twelve-cylinder motor developing 400 h.p. at 2,250 r.p.m. The machine has been entered by Mr. S. E. J. Cox through the Aero Club of Texas.

### Sweden and Air Mails

AN application has been made by the Swedish Postal authorities to the Government for permission to establish a regular aerial mail between Malmoe and Berlin, *via* Warnemuende. It is proposed that the service be maintained by German pilots on Junker machines, and it is stated that the consent of the Allies to this has been granted for a period of three months.



The International Yacht Cup Race off Sandy Hook, showing "Shamrock" and the "Resolute" as seen from a Curtiss 'plane at 1,000 feet up

(Curtiss Aero Photo.)

# THE ROYAL AIR FORCE

London Gazette, August 10

## Permanent Commissions

The Christian names of Flight Lieut. Patrick Joseph Flood (Med.) are as now described and not Patrick James, as in *Gazette* July 13. The initials of Lieut. H. J. Q. Campbell (Ad.) are as now described, and not as in *Gazette* Aug. 1, 1919. The initials of Capt. A. FitzR. Somerset-Leeke (T.) are as now described, and not as in *Gazette* Aug. 1, 1919.

## Short Service Commissions

The following Officers are granted short service commns. in ranks stated, with effect from dates indicated, retaining their seny. in substantive rank last held by them prior to grant of this commn., except where otherwise stated:—

**Flight Lieut.**—R. G. Gardner, D.S.C. (A.); July 28.  
**Flying Officer (from Flight Lieut.)**—R. H. Daly, D.S.C., D.F.C. (A.); Aug. 4.  
**Flying Officers**—H. E. Cardwell, A.F.C. (A.); July 26. B. B. Caswell (A. and S.); July 26. C. Chambers (A.); Aug. 3. R. J. Divers (A.); July 29. J. H. W. Goodall (A.); Aug. 9. C. G. Halliday (A.); Aug. 4. S. C. Harker (A.); July 27. C. S. Hartung, M.M. (A.); (July 30, and with seny. of that date). C. M. McClean (A.); Aug. 5. A. P. Ritchie, A.F.C. (A.); July 14. A. C. Sanderson, D.F.C. (A.); May 10 (substituted for *Gazette* May 18). J. C. Walker (A.); Aug. 9. G. N. Wilton (A.); July 24.  
**Observer Officer**—J. A. Hollis; Jan. 6 (substituted for *Gazette* Jan. 6).  
**Flying Officers (from Pilot Officers), with Seny. of Dates Indicated**—C. H. Baker (A.); Aug. 3. A. E. Beilby (A.); July 26. C. N. C. Dickson, A.F.C. (A.); July 23. V. C. Cordingley (A. and S.); July 26. G. A. Elliott (A.); July 31.

Flying Officer Daly will be placed at head of list of Flying and Observer Officers, and will retain seny. relative to officers who have been similarly gazetted to short service commns. in a rank lower than their previous substantive rank, in accordance with his previous position on gradation list.

The notifications in *Gazettes* of dates indicated, appointing following officers to short service commns., are cancelled.—Flying Officer G. J. Stroud, M.B.E. (T.); Sept. 12, 1919. Flying Officer F. Adams (T.); Oct. 24, 1919. Flight Lieut. E. Gribben, M.C. (A.); May 4.

The surname of Flight Lieut. W. F. Sheil, M.B. (Med.) is as now described, not Shiel, as in *Gazette* July 13.

The Christian names of Flying Officer LeeRoy Lowerison Brown, D.F.C. (A.), are as now stated, not Luroy Lowerison, as in *Gazette* Sept. 12, 1919.

The rank and classification of Flying Officer J. C. Bulteel (A.) are as now described, not Observer Officer, as in *Gazette* Dec. 5, 1919.

## Flying Branch

**Pilot Officers to be Observer Officers**—T. B. Howard (since demobilised); Aug. 23, 1919. F. Morley-Dingle (since demobilised); March 30. W. V. Leftley (since demobilised); April 3.

Sec. Lieut. H. Roberts (O.) is placed on the retired list; Aug. 11.

**Transferred to Unemployed List**—Capt. G. B. Carr; Feb. 27, 1919 (substituted for *Gazette* July 30). Lieut. E. L. Ives; April 9, 1919. Capt. W. F. N. Forrest, D.F.C.; April 24, 1919. Sec. Lieut. G. McM. Findlay; July 13, 1919 (substituted for *Gazette* July 18, 1919). Lieut. A. McConnell-Wood; Sept. 16, 1919. Sec. Lieut. A. Shildrick; Oct. 12, 1919. Lieut. E. C. Goldsworthy; Dec. 8, 1919 (substituted for *Gazette* Jan. 23). Sec. Lieut. C. A. Dixon; July 12. Sec. Lieut. A. Morrison; July 16.

Capt. H. S. Lees-Smith (S. African Defence Force) relinquishes his commn. on account of ill-health caused by wounds, and is granted the rank of Maj.; July 14.

Lieut. R. K. Mackenzie relinquishes his commn. on account of ill-health, and is permitted to retain his rank; Oct. 12, 1918 (substituted for *Gazette* Sept. 6, 1918).

Lieut. E. G. Breen relinquishes his R.A.F. commn. on appt. to a commn. in the Army; July 27.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank.—R. H. Bruce (contracted on active service), H. R. Whitehead (caused by wounds); Aug. 4.

The Christian names of Lieut. Gerald Ingram-Thorman are as now described, and not as in *Gazette* May 6, 1919.

## Administrative Branch

**Transferred to Unemployed List**—Lieut. H. B. Hamilton; March 2, 1919. Lieut. R. N. Swann; May 10, 1919. Lieut. L. F. Goodwin, M.C.; June 5, 1919. Capt. L. F. Colebrook; Oct. 15, 1919. Lieut. E. J. Broadbent; July 21.

Lieut. (actg. Capt.) C. H. Newbold relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain the rank of Capt.; Dec. 14, 1918 (substituted for *Gazette* Dec. 13, 1918).

Sec. Lieut. R. White relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; Aug. 4.

## Technical Branch

Sec. Lieut. S. Empsall to be Lieut. (Grade A); Dec. 16, 1918 (substituted for *Gazette* July 1, 1919).

Lieut. A. W. Edwards relinquishes his R.A.F. commn. on ceasing to be employed; July 10.

**Transferred to Unemployed List**—Capt. D. Gordon (substituted for *Gazette* May 11). Maj. C. J. Stewart, O.B.E. (substituted for *Gazette* Jan. 6). Lieut. J. S. V. Stephen (substituted for *Gazette* Feb. 24). Capt. F. S. Wigley (sub-

stituted for *Gazette* Feb. 24). Lieut. A. Winks (substituted for *Gazette* Feb. 24). Capt. H. S. Wildeblood (substituted for *Gazette* Jan. 30); Aug. 1, 1919. Capt. J. J. Meakin; Aug. 4, 1919 (substituted for *Gazette* Feb. 20). Lieut. T. W. Deary; April 19 (substituted for *Gazette* May 4). Sec. Lieut. J. C. Mungovan; June 17.

The notifications in *Gazettes* Oct. 3, 1919, concerning Capt. B. G. McCormick, Mar. 2 concerning Pilot Officer J. E. Catt, Feb. 13 concerning Sec. Lieut. I. F. A. Klapper, are cancelled.

## Medical Branch

Capt. J. B. Barnett relinquishes his commn. on ceasing to be employed, and is permitted to retain his rank; April 3 (substituted for *Gazette* April 20).

## Dental Branch

Flying Officer R. H. Moore to be Flight Lieut.; Aug. 1.

## Memoranda

Then follow the names of 19 Cadets granted hon. commns. as Sec. Lieuts., with effect from date of their demobilisation.

Probty. Flight Officer E. H. Hore is granted an hon. commn. as Sec. Lieut.; Feb. 4, 1919. Lieut. D. B. Gunn relinquishes his commn. on account of ill-health, and is granted rank of Capt.; July 29.

London Gazette, August 13

## Permanent Commissions

Flight Lieut. J. H. Porter, M.C., M.B. (Medical), is granted a permanent commn. in the rank stated; May 11, seny. next below Flight Lieut. A. J. O. Wigmore, M.B. (substituted for notifications in the *Gazette* of June 15 and July 13).

## Flying Branch

**Transferred to Unemployed List**—Sec. Lieut. (Hon. Capt.) S. Brooke, M.C.; May 13, 1919. Lieut. A. E. Wunsch; May 26, 1919. Lieut. F. W. Castle; June 17, 1919. Lieut. W. F. H. Harris; Sept. 12, 1919 (substituted for *Gazette* Oct. 21, 1919). Lieut. (Hon. Capt.) H. Ward; Nov. 12, 1919. Capt. N. B. Fuller, M.B.E., Sec. Lieut. H. Mottershaw, Sec. Lieut. W. Richards; Aug. 4.

Lieut. V. M. C. B. de Sarigny relinquishes his R.A.F. commn. on appt. to a commn. in the Army; June 2 (*Gazette* May 21 to stand).

The following Lieuts. relinquish their commns. on account of ill-health caused by wounds, and are permitted to retain their rank:—C. S. Cope; Aug. 5. L. H. Riddell; Aug. 6.

Sec. Lieut. H. Lansdale relinquishes his commn. on account of ill-health caused by wounds, and is permitted to retain his rank; Aug. 6.

## Administrative Branch

Sec. Lieut. W. F. Swan to be actg. Lieut. whilst employed as Lieut.; Jan. 1, 1919.

**Transferred to Unemployed List**—Lieut. (actg. Maj.) H. J. L. Cappel; March 15, 1919. Lieut. W. M. B. Skinner; July 14.

## Technical Branch

Lieut. C. H. Biddlecombe to be Lieut., Grade (A) from (S); Feb. 16, 1919. Sec. Lieut. L. B. Lewis to be Sec. Lieut., Grade (B) from (Ad.); March 29, 1919.

Capt. F. R. Hardie (Lieut., Hussars) relinquishes his commn. on ceasing to be employed; June 13, 1919 (substituted for *Gazette* June 10, 1919).

**Transferred to Unemployed List**—Lieut. H. A. Samson; Jan. 16, 1919. Capt. W. A. W. Hallam; Feb. 17, 1919. Capt. J. C. Briggs (substituted for *Gazette* Feb. 3). Lieut. H. C. C. Gates (substituted for *Gazette* Jan. 30). Maj. D. C. M. Hume (substituted for *Gazette* Jan. 30); Aug. 1, 1919. Lieut. (Hon. Capt.) S. K. D'A. De Ferrars; Sept. 14, 1919. Capt. A. H. Kendall; Dec. 24, 1919. Sec. Lieut. R. C. Hill; Jan. 1 (substituted for *Gazette* Aug. 3). Maj. L. M. Bennett; June 10 (substituted for *Gazette* June 18). Sec. Lieut. Hill; July 23. Lieut. T. A. S. Lewis, M.C.; Aug. 1.

Flight Lieut. S. Frost to take rank and precedence as if his appointment as Flight Lieut. in the R.A.F. bore date March 2.

## Chaplains' Branch

The following Chaplains are granted relative rank as under for purposes of precedence, administration and discipline:—

**Air Commodore**—Rev. H. D. L. Viener, C.B.E., M.A. (Chaplain-in-Chief).

**Wing Commander**—Rev. R. E. V. Hanson, O.B.E., M.A.; Rev. S. L. Clarke, M.A., B.Sc.; Rev. J. Dey, D.S.O. (with relative rank of Group Capt. whilst employed as Staff Chaplain).

**Squadron Leader**—Rev. H. Marshall, M.A., Rev. J. R. Walkey, M.A., Rev. W. T. Rees, Rev. R. Hall, O.B.E. (with the relative rank of Group Capt. whilst employed as Staff Chaplain); Rev. P. C. C. Lamb, M.A., Rev. M. H. Edwards, M.A., Rev. C. A. B. Allen, B.A., Rev. G. H. Collier, M.A., Rev. D. F. Blackburn, Rev. J. Firth, M.C., Rev. G. L. Robinson, D.S.O., Rev. H. McCalman, M.C., M.A., Rev. J. S. Hobson, Rev. J. H. P. Still, B.A., Rev. W. Moffatt, M.A., B.D. (with relative rank of Group Capt. whilst employed as Staff Chaplain), Rev. S. J. Jones, M.C. (with relative rank of Group Capt. whilst employed as Staff Chaplain), Rev. G. A. Davis, Rev. H. Beauchamp, M.C., Rev. B. W. Keymer, O.B.E., Rev. A. McHardy, M.C., M.A., Rev. C. W. Hall, Rev. M. J. Dunne, Rev. J. T. S. Law, Rev. A. A. Crawshaw, M.A.

## Memoranda

The following Cadet is granted an hon. commn., with effect from date of his demobilisation.—72908 J. J. Cutler.

## Mentioned in Despatches

The following communiqué has been issued by the India Office:—

The names of the following have been brought to notice by the Commander-in-Chief in India for valuable services in India in connection with the operations against Afghanistan, 1919:—

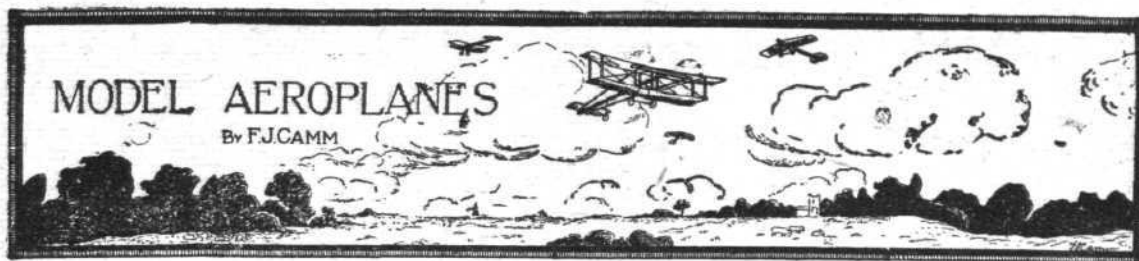
No. 12592 Sgt. H. E. BUESNAL, R.A.F.; Capt. (Act. Maj.) W. H. DOLPHIN, R.A.F.; No. 406434 Cpl. C. FUNNELL, R.A.F. No. P.1400 Act. Sgt.-Maj. J. DAW, R.A.F.; Lieut. (Act. Capt.) J. ROBERTSON, R.A.F.; Lieut. (Act. Capt.) E. A. ROUGH, R.A.F.

## Record London-Copenhagen Flight

FROM London to Copenhagen in 6 hrs. 5 mins., flying time, was the record established by Lieut. Vaughan Fowler on August 9 in a D.H. 9 aeroplane. The machine, with one passenger, left the Handley Page Aerodrome at Cricklewood at 12.10, reached Amsterdam at 2.15, and at 3.45 restarted for Copenhagen, where it arrived safely four hours later.

The machine is for the North-West European service, organised by English, Dutch, German, Danish and Swedish companies. The Copenhagen-London service is flown on Tuesdays, Thursdays, and Sundays, the return journeys being made on Mondays, Wednesdays, and Fridays.





All communications to be addressed to the Model Editor. A stamp should be enclosed for a postal reply

### The Kite and Model Aeroplane Association

HAVING had several discussions with representatives of the K.M.A.A., it is now an accomplished fact that the Association is again in existence. Much work, however, remains to be done to place it on a good sound footing. To commence with, will all those desirous of joining the Association please communicate with Mr. Akehurst, Victory Road, Wimbledon, and appraise him of the fact? This will serve a twofold purpose: firstly to acquaint him of the number of members he has in prospect, and incidentally it will "sound" the magnitude of the enthusiasm at present evinced in the matter.

This appeal does not merely apply to London and its environs, but also to provincial enthusiasts. In the old days, one fears, London clubs were in a coign of vantage in so far as competitions were concerned, but toward the latter end of 1913 the introduction of the Farrow Shield competition, in which the competition took place upon the club's own flying rendezvous, somewhat eliminated this difficulty. Every effort will be made to make the tentacles of the Association reach to every town in the United Kingdom where a model club exists.

At the present moment Mr. Akehurst is acting as Secretary *pro tem.*, but his duties have become so arduous that his time is occupied practically to the exclusion of everything else, and the Association wishes to get into touch with an energetic person willing to act as Secretary. Who will respond?

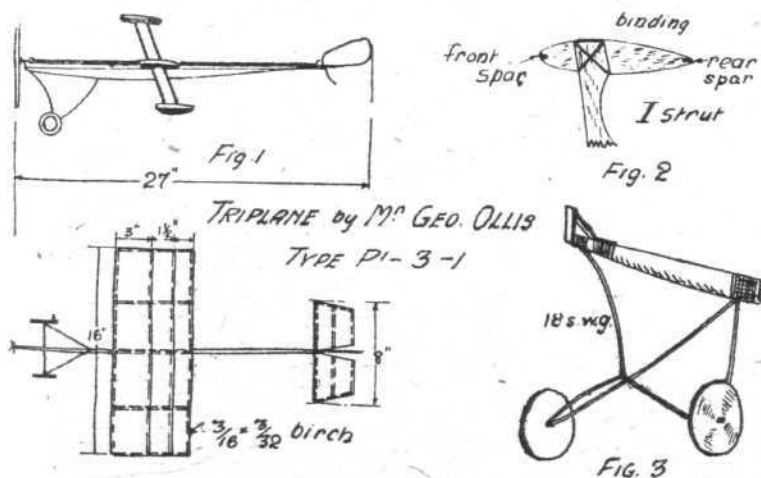
The cups, trophies and medals belonging to the club have all been returned by the last winners, and those to whom medals are due should communicate with Mr. Akehurst at the address given above.

The revival of the Association, for which everyone has been longing, has come. It remains now in the hands of our readers to make it as live a body as it was formerly.

### A Model Triplane

MR. GEORGE OLLIS writes:—

As I have observed that the Model page of FLIGHT has been somewhat poorly supplied with details of readers' recent machines, I am sending the following description of my most recent model which is of an unusual type, being a small tractor triplane.



The span of the main planes is 16 ins., chord 3 ins., and they are connected by I struts which are let into very deep ribs on each plane (see Fig. 2). This system of strutting seems to be less complicated than most and is an attempt at following full-size practice.

### Italians in Peru

AN Italian-Peruvian air navigation company has been organised at Lima with the object of developing aviation in Peru. It proposes to run a regular service between Lima and Iquitos in the Amazon region, and the starting of further services depends upon the provision of landing grounds and

The fuselage of the model is a streamline hollow spar, varnished with shellac. The chassis (see Fig. 3) is of my own design, being lighter and offering less resistance than the conventional vee.

The tail plane and fin are very similar to those fitted on the Sopwith triplane.

Up to the present the model has not been tested, but I will forward you the results of the trials, which I hope will take place before the end of the month.

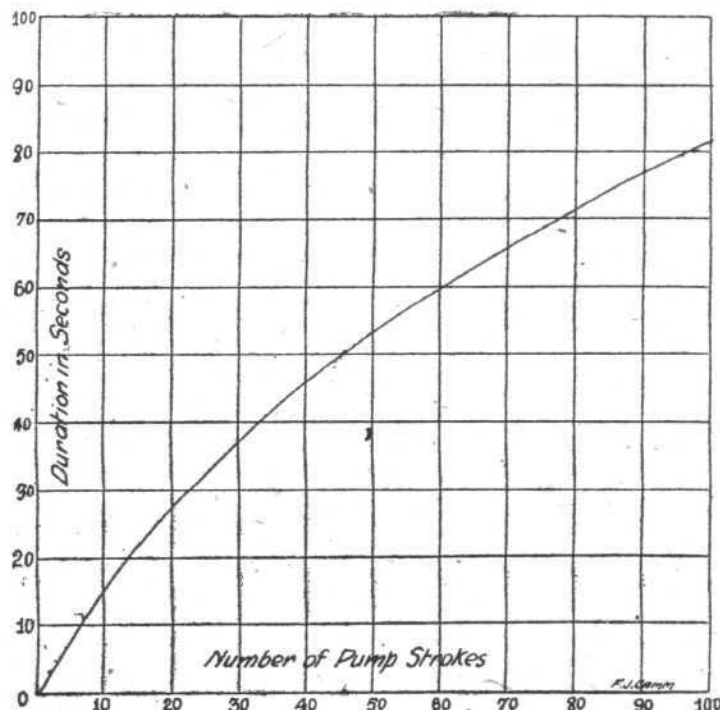
The dimensions of the triplane are as follows:—

|          |                      |                    |         |
|----------|----------------------|--------------------|---------|
| Span ..  | 16 ins. (all planes) | Length of fuselage | 23 ins. |
| Chord .. | 3 "                  | Length o.a.        | 27 "    |
| Gap ..   | 3 1/2 "              | Span of tail       | 8 "     |
| Stagger  | 1 1/2 "              | Diameter of prop.  | 8 "     |

### The Groves Compressed Air Engine

THE graph here given has been plotted from the relative number of pump strokes/duration in seconds. It shows the remarkable efficiency of the engine. If leakage is excessive at high speeds, the form of the graph would not be so regular, but would show an upward tendency after 40 or 50 pump strokes, which were of 10-in. stroke by 3/4-in. bore. This averages 1/2 lb. per pump stroke.

As a test I turned the airscrew backward with the tap open, so that the pistons pumped air into the container, and carefully counted 200 revs.; upon releasing the screw it made exactly 200 revs., showing that leakage is practically



negligible. Perhaps the most satisfactory part about the engine is the fact that it does not become bent or distorted if the machine happens to nose-dive during the turning-up stage. Throughout my experiments the engine has never once given trouble, and the valve works extremely sweetly; indeed, having investigated the "internals," it is almost impossible for the valve to leak, and the higher the pressure the less does the leakage become. The engine is also jointed in an engineering way, and soldered joints are entirely eliminated, save where the inlet pipes are connected. One congratulates Mr. Groves on producing an ingenious and reliable job.

hangars. A flying school will be established near the capital and the equipment will consist of Caproni machines.

### An Italian School in Argentina

It is stated that an Italian company has organised a flying school at Buenos Ayres, and has appointed Capt. Laureati, a well-known Italian pilot, as director.



## SIDEWINDS

COAN, Commodore of Clacton Regatta, is alliterative, but it also emphasises one of the many sides of Mr. Coan's activities—his enterprise, goodwill and endeavour to "improve"—in connection with charming Clacton. His support of local affairs is of a very substantial kind, as is evidenced by his name appearing several times as donor of challenge cups and prizes at the Regatta which was held on Wednesday of this week. Apart from this, we have a shrewd suspicion that if truth were known regarding the splendid firework display which concluded the proceedings that was one of the stunts for which "Bobbie" was mainly responsible.

MESSRS. A. V. ROE AND CO., LTD., have now transferred their head office to Manchester, and all correspondence should, for the future, be addressed to them at Avro Works, Newton Heath, Manchester.

It is interesting to note that Messrs. Serck Radiators, Limited, of Greet, Birmingham, are busily engaged upon aircraft radiators for the Air Ministry. This certainly looks as though things are moving in the right direction.

We regret to announce the death of Mr. R. T. Nicol, Secretary and Treasurer of Messrs. Arrol-Johnston, Ltd., upon Sunday, the 1st inst. Mr. Nicol, though but of early middle age, had been connected with the Dumfries firm from the earliest days of the motor industry, and the news of his untimely decease will come as a shock to his many friends in trade and aeronautical circles.

## COMPANY MATTERS

### Handley Page, Ltd.

THE report for 1919 states that the sum standing as profit for the year is £51,285, from which the dividend at the rate of 7 per cent. per annum, in respect of the period to December 31, 1919, paid on the preference shares on February 9 last, absorbed £22,084, leaving £29,201, which the directors propose to carry forward, subject to excess profits duty when the amount of the company's liability is determined. The company's liability for excess profits duty and income tax up to December 31, 1918 (which also remains to be finally determined) has been fully reserved for in the tax reserve account.

The balance-sheet shows that before arriving at the profit of £51,285, as above, the sum of £29,345 has been applied to writing off the whole of the balance of the underwriting commission and brokerage, and further sums have been applied to writing off the amount previously standing in the company's books as goodwill and towards writing off the amount of £140,000 paid by the company in respect of patents and registered designs, the directors considering it good policy to write off these amounts against the profits (arising from war contracts) of the company, so as to leave the company in a good financial position for carrying on its post-war activities. It should be noted that the company have during the year definitely acquired their factory premises on advantageous terms, and that the buildings and property standing in the balance-sheet at £108,106 have been valued at £160,000. The excess of assets over liabilities for the year before allowing for the above writings off and excess profits duty is, therefore, over £135,000, which the directors consider satisfactory in view of the fact that the whole of the company's factory was disorganised about the middle of the year by the sudden cancellation of all Government contracts, which resulted in the company having to face a period (far from remunerative) during which the factory was being reorganised to enable the company to get ahead with the development of commercial aviation. In this connection it is interesting to notice that since the inauguration of civilian aviation in Great Britain in the spring of last year, large numbers of passengers and freight in great quantity have been carried by Handley Page aircraft, and the records of the company show that the revenue from commercial air transport is rapidly increasing.

It will, moreover, interest shareholders to know that it is a subsidiary company—Handley Page Transport, Ltd.—which is very largely concerned in operating Handley Page aircraft, and that the company owns the whole of the capital which has so far been issued by Handley Page Transport, Ltd. The latter company has recently secured the contract for the carriage by air of the Royal Mails to Holland and Belgium, and Handley Page, Ltd., has also secured a contract from the Brazilian Government for the carriage by air of mails in various parts of Brazil. The company has supplied aircraft to all the more important countries of the world, and it has agents or representatives in all those countries. The activities

of the company, however, have not been confined to the manufacture and sale of aircraft, and the directors are pleased to report that contracts to the total value of well over £750,000 have been secured for the assembly of motor cars and the manufacture of motor car bodies. The company's factory is now engaged mainly on the carrying out of these contracts, the manufacture of aircraft (except of new types) not being profitable to any great extent at the present time owing to the recent acquisition by the Aircraft Disposal Co., Ltd., of the surplus Government aircraft and aircraft material. The directors report that the company was mainly instrumental in the flotation of the Aircraft Disposal Co., Ltd., and, in addition to being the largest shareholder in that company, has been appointed its sole selling and managing agents.

### IMPORTS AND EXPORTS, 1919-1920

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; and for 1919, see "FLIGHT" for January 22, 1920.

|              | Imports.  |         | Exports. |           | Re-Exportation. |        |
|--------------|-----------|---------|----------|-----------|-----------------|--------|
|              | 1919.     | 1920.   | 1919.    | 1920.     | 1919.           | 1920.  |
| January ...  | 555,989   | 2,323   | 57,571   | 32,752    | —               | 697    |
| February ... | 453,822   | 9,320   | 57,972   | 68,932    | —               | —      |
| March ...    | 704,424   | 2,092   | 72,716   | 67,600    | 400             | —      |
| April ...    | 97,662    | 5,918   | 25,433   | 148,484   | —               | —      |
| May ...      | 136,631   | 761,425 | 38,428   | 237,627   | —               | 400    |
| June ...     | 1,410     | 491     | 41,526   | 300,572   | —               | 61,150 |
| July ...     | 136,463   | 51,020  | 41,290   | 286,646   | —               | —      |
|              | 2,086,401 | 832,589 | 334,936  | 1,142,613 | 400             | 62,247 |

### AERONAUTICAL PATENTS PUBLISHED

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

#### APPLIED FOR IN 1917

Published August 19, 1920

- 18,604. G. CAPRONI. Devices for tensioning cables, etc. (147,957.)

#### APPLIED FOR IN 1919

Published August 19, 1920

- 6,675. BENARD-BARBIER ET TURENNE. Beacon lights, etc. (129,257.)  
9,141. W. W. CHRISTMAS. Aeroplanes. (147,971.)  
10,190. E. R. CALTHROP. Parachutes. (147,993.)  
11,344. R. LE ROSSIGNOL. Airships. (148,008.)  
13,730. W. W. WEST. Parachutes. (148,028.)

#### APPLIED FOR IN 1920

Published August 19, 1920

- 13,176. CURTISS AEROPLANE AND MOTOR CORPORATION. I.C. engines. (143,247.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xx, xxi and xxii).

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The Aircraft Engineer and Airships

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| 12 " " " " ..         | 30 | 4  | 12 " " " " ..         | 33      | 0  |    |  |

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